

Drawing Name: S001-structural_general_notes.dwg Layout: S001 @ 1/24, PROJECTS\6746_SFOBBStructDwg
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REVISED BY	DATE REVISED	CALCULATED-DESIGNED BY	CHECKED BY	CONSULTANT FUNCTIONAL SUPERVISOR	BAY AREA TOLL AUTHORITY

A. GENERAL STRUCTURAL NOTES:

- SHOP DRAWINGS OF ALL FABRICATED ITEMS SHALL BE SUBMITTED FOR REVIEW ACCORDING TO DIVISION 1 OF THE SPECIFICATIONS PRIOR TO FABRICATION. SHOP DRAWINGS FOR ELEMENTS THAT ARE TO BE DESIGNED BY THE CONTRACTOR SHALL BE SEALED BY A LICENSED PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF CALIFORNIA. SUBMIT FOR RECORD SEALED CALCULATIONS FOR ELEMENTS OR SYSTEMS REQUIRING ENGINEERING DESIGN.
- VERIFY ALL DIMENSIONS AND ELEVATIONS WITH ARCHITECTS PLANS.
- ALL EXISTING CONDITIONS AND ASSOCIATED DIMENSIONS ARE TO BE VERIFIED IN THE FIELD. SUCH VERIFICATION IS THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR CONFLICTS, BETWEEN EXISTING CONDITIONS AND DESIGN AND DETAILS INDICATED BY THESE DRAWINGS.
- SEE ARCHITECTS PLANS FOR DIMENSIONS FOR OPENINGS IN WALLS AND IN ROOF AND FLOOR SYSTEMS.
- THE CONTRACTOR SHALL CHECK AND COORDINATE SIZES AND LOCATIONS OF ALL BLOCK-OUTS, CONDUITS, PIPE SLEEVES, EMBEDDED ITEMS, ETC. WITH MECHANICAL AND ELECTRICAL CONTRACTORS.
- NO PIPES, SLEEVES, ETC. SHALL PASS THROUGH BEAMS OR COLUMNS, OR STRUCTURAL PRECAST PANELS, UNLESS CLEARLY INDICATED ON STRUCTURAL PLANS UNLESS WRITTEN AUTHORIZATION IS OBTAINED FROM THE ARCHITECT/ENGINEER.
- TYPICAL DETAILS ARE SHOWN ON SHEETS GENERALLY INDICATED S00X. THE GENERAL DETAILS INCLUDED MAY OR MAY NOT BE CUT ON PLANS OR SECTIONS, BUT THESE GENERAL DETAILS ARE TO BE USED AS APPLICABLE.
- DETAILS NOT SPECIFICALLY INDICATED SHALL BE SIMILAR TO DETAILS SHOWN FOR SIMILAR CONDITIONS.
- CODES IN FORCE AS OF JULY 1, 2009.
 - ALL DESIGN AND CONSTRUCTION SHALL CONFORM TO THE 2007 CALIFORNIA BUILDING CODE.
 - BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318).
 - SPECIFICATIONS FOR THE DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS (AISC).
 - SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS (ACI 301) AND ACI MANUAL OF CONCRETE PRACTICE.
 - STEEL DECK INSTITUTE DESIGN MANUAL FOR FLOOR DECKS AND ROOF DECKS (SDI).
 - BUILDING CODE REQUIREMENTS FOR CONCRETE MASONRY. (ACI 530)
 - SPECIFICATIONS FOR DESIGN AND CONSTRUCTION OF LOAD BEARING MASONRY (NCMA).
 - SPECIFICATIONS FOR THE DESIGN OF COLD FORMED STEEL STRUCTURAL MEMBERS (AIS)
 - AMERICAN WELDING SOCIETY STANDARDS AND SPECIFICATIONS. (AWS)
 - AWS D1.1 "STRUCTURAL WELDING CODE-STEEL".
 - AWS D1.4 "STRUCTURAL WELDING CODE-REINFORCING STEEL".
 - AWS D1.6 "STRUCTURAL WELDING CODE FOR STAINLESS STEEL".
 - AWS D19.0 "WELDING ZINC COATED STEEL".
 - GUIDE FOR CONCRETE FLOOR AND SLAB CONSTRUCTION (ACI 302)
 - CONCRETE REINFORCING STEEL INSTITUTE "MANUAL OF STANDARD PRACTICE" (CRSI).
 - "RECOMMENDED PRACTICE FOR CONCRETE FORM WORKS" (ACI 347).
 - SPECIFICATIONS FOR CONCRETE MASONRY CONSTRUCTION (ACI 530.1).
 - WHEN THE PROVISIONS OF THE ABOVE CODES AND STANDARDS CONFLICT WITH THE 2007 CALIFORNIA BUILDING CODE REGULATIONS OR WITH EACH OTHER, USE THE MOST STRINGENT OF THE REQUIREMENTS.
- LIVE LOAD: (PER 2007 CALIFORNIA BUILDING CODE)

ROOF LIVE LOAD:	20 PSF (REDUCIBLE)
FLOOR LIVE LOADS:	
BASEMENT	100 PSF (REDUCIBLE)
FIRST FLOOR	100 PSF (REDUCIBLE)
VAULT	150 PSF
SALLY PORT	HS 20-44 TRUCK
UPPER FLOOR	80 PSF (REDUCIBLE)

SNOW:	
GROUND SNOW LOAD (P)	0 PSF
IMPORTANCE FACTOR (I)	1.0
EXPOSURE FACTOR (C)	1.0
THERMAL FACTOR (C)	1.0

WIND	
BASIC WIND SPEED (3 SEC. GUST)	85 MPH
IMPORTANCE FACTOR	1.0
OCCUPANCY CATEGORY	II
EXPOSURE CATEGORY	D
INTERNAL PRESSURE COEFFICIENT	+/- 0.18
WIND PRESSURE ON MAIN WIND-RESISTING SYSTEM:	
INWARD ON WINDWARD WALLS	12 PSF
OUTWARD ON LEEWARD WALLS	9 PSF
OUTWARD ON SIDEWALLS	12 PSF
OUTWARD ON WINDWARD 2/3 OF ROOF	11 PSF
OUTWARD ON LEEWARD 1/3 OF ROOF	17 PSF
WIND PRESSURE ON COMPONENTS AND CLADDING:	
WALLS	25 PSF
WALLS NEAR CORNERS	33 PSF
ROOFS	23 PSF
ROOFS NEAR EDGES	38 PSF
ROOFS NEAR CORNERS	58 PSF
OVERHANGS	36 PSF
OVERHANGS NEAR CORNERS	58 PSF

SEISMIC:	
IMPORTANCE FACTOR, I	1.0
OCCUPANCY CATEGORY	II
SPECTRAL RESPONSE ACCELERATION, Ss	1.5g
SPECTRAL RESPONSE ACCELERATION, S1	0.9g

SITE CLASS	E
SPECTRAL RESPONSE COEFFICIENT, Sps	0.9
SPECTRAL RESPONSE COEFFICIENT, Sps1	0.96
SEISMIC DESIGN CATEGORY	D
ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE	
BASIC SEISMIC RESISTING SYSTEM:	
OPERATIONS BLDG. SPECIAL STEEL CONCENTRICALLY BRACED FRAMES	
DESIGN BASE SHEAR, V	132 KIPS
RESPONSE COEFFICIENT, Cs	0.15
RESPONSE MODIFIER, R	6.0
WALKWAY CANOPY: ORDINARY STEEL MOMENT FRAME	
DESIGN BASE SHEAR, V	5 KIPS
RESPONSE COEFFICIENT, Cs	0.26
RESPONSE MODIFIER, R	3.5

- THE STRUCTURE IS ALSO DESIGNED FOR ANY ADDITIONAL DEAD AND/OR LIVE LOADS AS INDICATED ON THE DRAWINGS.
- ASSUMED DESIGN TEMPERATURE DIFFERENTIAL FOR EXPOSED PORTIONS OF THE STRUCTURE SHALL BE ±30 DEGREES.
- GUARDRAILS SHALL MEET REQUIREMENTS OF THE 2007 CALIFORNIA BUILDING CODE.
- PROVIDE ADEQUATE SHORING OR BRACING DURING CONSTRUCTION TO RESIST FORCES SUCH AS WIND AND UNBALANCED LOADING DUE TO CONSTRUCTION.

B. EARTHWORK and FOUNDATIONS:

- REFERENCE GEOTECHNICAL INVESTIGATION WILL BE PREPARED BY KLEINFELDER. THE CONTRACTOR SHALL OBTAIN A COPY OF THIS REPORT AND FOLLOW ALL RECOMMENDATIONS WITHIN.
- ALL FOUNDATIONS HAVE BEEN DESIGNED TO BE SUPPORTED ON 14-INCH SQUARE, 120 FEET LONG, 7000 PSI, DRIVEN PRECAST CONCRETE PILES CAPABLE OF SUPPORTING AN ALLOWABLE UNFACTORED SERVICE LOAD OF 200 KIPS CALCULATED AS FOLLOWS: 170 KIPS APPLIED LOADS + 30 KIPS DOWNDRAW = 200 KIPS TOTAL SERVICE LOAD
- CONTRACTOR SHALL LOCATE EXISTING BATTERED TIMBER PILES IN VICINITY OF GRIDLINE A. NOTIFY ENGINEER OF THESE TIMBER PILE LOCATIONS, AND SUBJECT TO ENGINEER'S APPROVAL SHALL ADJUST LOCATION OF PRECAST PILES TO AVOID EXISTING BATTERED TIMBER PILES.
- AT STEPPED FOOTINGS, THE LOWER FOOTING SHALL BE PLACED FIRST.
- A TESTING LABORATORY SHALL BE RETAINED BY THE OWNER TO PERFORM SOIL COMPACTION INSPECTION AND TESTING, TO IDENTIFY EXISTING FILL AND SOFT MATERIALS TO BE REMOVED IN FOUNDATION OR SLAB AREAS, TO IDENTIFY PROPER BEARING STRATA, BASED ON RECOMMENDATIONS CONTAINED IN GEOTECHNICAL REPORT AND ACTUAL FIELD OBSERVATIONS.
- THE BUILDING FOOT PRINT SHALL BE STRIPPED OF ALL ORGANIC MATERIALS.
- HEAVY COMPACTION EQUIPMENT SHALL NOT BE USED WITHIN FIVE FEET OF WALLS TO AVOID CREATING EXCESSIVE LATERAL EARTH PRESSURES.
- LATERAL EARTH PRESSURES USED FOR DESIGN ARE AS FOLLOWS:

AT REST PRESSURE = 52 PCF ABOVE GROUND WATER TABLE, AND 88 PCF BELOW GROUND WATER TABLE.
PASSIVE PRESSURE IN COMPACTED GRANULAR SOIL = 600 PCF (UPPER 1'-0" OF SOIL FROM GRADE IS DISCOUNTED)
OVERBURDEN PRESSURE TO WALLS = 0.4 X GROUND SURFACE PRESSURE, OR 150 PSF TO WALL SURFACE FOR VEHICLES.
SEISMIC PRESSURE TO WALLS = 24 X WALL HEIGHT, UNIFORM PRESSURE APPLIED AT 0.6 X WALL HEIGHT.
SOIL UNIT WEIGHT ASSUMED = 120 PCF
TEMPORARY ALLOWABLE SOIL PRESSURE DURING CONSTRUCTION = 1000 PSF
- FOUNDATION WALL BACKFILL SHALL NOT BE UNBALANCED BY MORE THAN TWO (2) FEET ON EITHER SIDE AT ANY TIME. BASEMENT WALL AND RETAINING WALL BACKFILL SHALL NOT BE PLACED BEFORE THE INTERIOR FLOOR SLAB IS PLACED. UNLESS THE WALL IS ADEQUATELY BRACED, RETAINING WALL AND BASEMENT WALL BACKFILL MATERIAL SHALL BE FREE DRAINING GRANULAR FILL ACCEPTABLE TO THE SOILS ENGINEER.
- WALL DRAINAGE SHALL BE INSTALLED TO REDUCE THE RISK OF WATER PRESSURE DEVELOPING BEHIND RETAINING WALLS. BACKFILL PLACED WITHIN 2 FEET OF THE BACK FACE OF THE WALL SHOULD CONSIST OF DRAINAGE FILL. WITHIN A ZONE DEFINED BY A 30 DEGREE ANGLE WITH THE VERTICAL, EXTENDING UP FROM THE BASE OF THE WALL, THE REMAINING BACKFILL SHOULD CONSIST OF GRANULAR ON-SITE FILL. IF THE FINES CONTENT (MATERIAL PASSING THE NO. 200 SIEVE SIZE) OF THE GRANULAR ON-SITE FILL EXCEEDS 10 PERCENT, AS MAY BE THE CASE TO FACILITATE MATERIAL RE-USE ON SITE, A SUITABLE NON-WOVEN GEOTEXTILE FILTER FABRIC SUCH AS MIRAFI 140N SHALL BE PROVIDED BETWEEN THE GRANULAR ON-SITE FILL AND THE DRAINAGE FILL.

C. CAST IN PLACE CONCRETE:

- CONCRETE USED IN THE WORK SHALL HAVE THE FOLLOWING MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS:

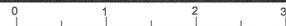
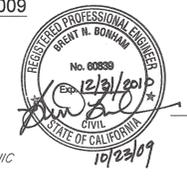
FOOTINGS, GRADE BEAMS, AND PILE CAPS	5000 PSI
EXTERIOR PAVING, SLAB ON GRADE	5000 PSI
ELEVATED SLABS	4000 PSI
WALLS, COLUMNS AND PILASTERS	5000 PSI
- INTERIOR GRADE SLABS SHALL BE PLACED ON 6" MINIMUM OF CRUSHED ROCK BASE COVERED BY 10 MIL VAPOR BARRIER. CRUSHED ROCK BASE SHALL BE CONTINUOUS UNDER THICKENED SLABS.
- CONCRETE SHALL BE IN STRICT CONFORMANCE WITH THE CURRENT ACI MANUAL OF CONCRETE PRACTICE.
- NO ALUMINUM SHALL BE PLACED IN CONCRETE.
- CONTROL JOINTS OR CONSTRUCTION JOINTS IN SLABS ON GRADE SHALL BE PLACED AS SHOWN ON PLANS. WHERE NOT SHOWN, JOINTS SHALL BE SPACED TO DIVIDE THE SLAB INTO PANELS NOT TO EXCEED 250 SQUARE FEET. THE LONGER DIMENSION OF EACH PANEL SHALL NOT EXCEED THE SHORTER DIMENSION BY MORE THAN 20%. JOINTS SHALL BE HAND TOoled, CAST IN, OR SAW CUT (SOFT SAW CUT PREFERRED).
- PROVIDE CONCRETE BASES FOR MECHANICAL EQUIPMENT AS REQUIRED. ALL SHALL BE 4" THICK ON TOP OF FLOOR SLAB, WITH ONE LAYER OF #4s @ 12" o.c. EACH WAY, UNLESS NOTED OTHERWISE.

- IN WALLS, THE HORIZONTAL LENGTH OF PLACEMENT SHALL NOT EXCEED 60 FEET, (i.e. BETWEEN CONSTRUCTION JOINT WITH INTERMEDIATE CONTROL JOINTS SPACED AT 15'-0" CENTERS MAXIMUM, FOR EXPOSED SITE WALLS. 30'-0" MAXIMUM FOR BASEMENT AND FOUNDATION WALLS. UNLESS NOTED OTHERWISE. SEE ARCHITECTURAL DRAWINGS FOR JOINT LOCATIONS.
- FOUNDATIONS OR PORTIONS OF FOUNDATIONS WHICH ARE BELOW GRADE AND WHICH WILL NOT BE EXPOSED, MAY BE EARTH FORMED, WITH A MINIMUM CONCRETE COVER AS PER NOTE E15.
- WHERE CONSTRUCTION JOINTS ARE INDICATED BY A JAGGED LINE AT THE INTERFACE OF THE TWO POURS, THE INTERFACE SHALL BE ROUGHENED TO A FULL AMPLITUDE OF APPROXIMATELY 1/4". CONSTRUCTION JOINTS NOT SHOWN SHALL BE LOCATED BY THE CONTRACTOR, APPROVED BY THE ARCHITECT/ENGINEER, TO LEAST IMPAIR THE STRENGTH OF THE STRUCTURE.
- ALL EXPOSED CORNERS SHALL HAVE 1/4" CHAMFER, UNLESS NOTED OTHERWISE.
- AGGREGATE FOR NORMAL WEIGHT CONCRETE SHALL MEET ASTM C33. AGGREGATE FOR LIGHT WEIGHT CONCRETE SHALL MEET ASTM C330. AGGREGATE SHALL NOT BE LARGER THAN 3/4" NOMINAL SIZE IN STRUCTURAL CONCRETE, UNLESS NOTED OTHERWISE.
- NO CALCIUM CHLORIDE SHALL BE USED IN CONCRETE.
- FLOOR SLABS, WALLS, AND ALL EXTERIOR CONCRETE SHALL HAVE 6% (+/- 1%) ENTRAINED AIR. 6% SHALL BE THE TARGET FOR THE MIX DESIGN WITH AN ALLOWABLE ± 1% FOR CONSTRUCTION TOLERANCE.
- THE CONTRACTOR SHALL REJECT ANY CONCRETE THAT EXCEEDS THE SLUMP LIMITS OR TOTAL ALLOWABLE MIXING TIME NOTED IN THE SPECIFICATION.
- FOUNDATION CONTRACTOR SHALL COORDINATE EMBEDS AND ANCHORAGES FOR OTHER WORK TO BE ATTACHED OR ANCHORED TO CAST IN PLACE FOUNDATION WITH APPROPRIATE CONTRACTORS.
- WHERE NEW CONCRETE IS DEPOSITED AGAINST CONCRETE THAT IS GREATER THAN 28 DAYS OLD, THOROUGHLY CLEAN EXISTING SURFACE OF LAITANCE AND FOREIGN MATERIAL, AND SATURATE WITH WATER. ALL STANDING WATER SHALL BE REMOVED PRIOR TO PLACEMENT OF NEW CONCRETE. WHERE INDICATED, ROUGHEN TO 1/4" AMPLITUDE.
- CORING OF STRUCTURAL CONCRETE SLABS AND SLABS ON METAL DECK MAY BE PERMITTED FOR CORE DIAMETERS OF 4 INCHES OR LESS. SPACE CORES A MINIMUM OF 1'-8". ALL SUCH CORING WILL NOT BE PERMITTED UNLESS SPECIFICALLY APPROVED IN ADVANCE BY THE ARCHITECT/ENGINEER.
- EVERY EFFORT SHALL BE EXERCISED TO AVOID CRACKS IN CONCRETE WORK. IN THE EVENT SHRINKAGE CRACKS, ETC. DO OCCUR, CRACKS OVER 0.06" SHALL BE REPAIRED BY MEANS OF A STRUCTURAL EPOXY GROUT. COST OF SUCH REPAIR IF REQUIRED SHALL BE BORNE BY THE GENERAL CONTRACTOR. REFERENCE SPECIFICATION SECTION 03300 PART 3 "CONCRETE REPAIRS" FOR MORE INFO.
- ALL CONCRETE IS REINFORCED UNLESS SPECIFICALLY NOTED AS UNREINFORCED AND PLAIN. REINFORCE ALL CONCRETE NOT OTHERWISE SHOWN WITH THE SAME REINFORCING AS IN SIMILAR SECTIONS OR AREAS. FOR CLARITY OF DETAILS, NOT ALL REINFORCEMENT IS SHOWN IN ALL SECTIONS AND DETAILS. REFER TO SCHEDULES, PLAN AND TYPICAL AND SIMILAR DETAILS FOR REINFORCING NOT SHOWN.

D. MASONRY:

- PROVIDE VERTICAL REINFORCING FOR MASONRY IN 4 FOOT LIFTS WITH 48 BAR DIAMETER LAPS, UNLESS OTHERWISE INDICATED. DOWEL FROM FOUNDATION WITH BARS MATCHING VERTICAL BARS IN SIZE AND SPACING. TOP LIFT TO TERMINATE IN STANDARD HOOK IN BOND BEAM, UNLESS OTHERWISE INDICATED.
- FOR ALL CMU, PROVIDE VERTICAL BARS #4 AT 48" O.C., 2-#4 AT ENDS, 3-#4 AT CORNERS, AND 2-#4 EACH SIDE OF EXPANSION JOINTS IN ALL REINFORCED MASONRY WALLS, UNLESS OTHERWISE INDICATED. DOWEL FROM FOUNDATION TO MATCH VERTICAL BARS IN WALL.
- PROVIDE (1) #4 CONTINUOUS FOR ALL BOND BEAMS, UNLESS NOTED OTHERWISE. FURNISH IN SHOP LENGTHS AND FIELD CUT. SEE PLANS FOR LOCATION. FILL BOND BEAMS WITH 2500 PSI GROUT.
- PROVIDE (2) #4 VERTICALLY (DOWELED FROM THE FOUNDATION) AND GROUT AT LEAST (2) ADJACENT BLOCK CORES CONTINUOUSLY WITH 2500 PSI CONCRETE GROUT FOR BEARING OF ALL LINTELS, BEAMS, ETC. AT EACH END, UNLESS NOTED OTHERWISE.
- FULLY GROUTED CMU ASSEMBLIES SHALL BE CONSTRUCTED TO MEET OR EXCEED A 28 DAY COMPRESSIVE STRESS (F'm) OF 1500 PSI (MIN) PER ASTM E 447 (NET AREA).
- MORTAR SHALL BE TYPE "M" OR "S" FOR ALL MASONRY WALLS.
- GROUT MIX FOR MASONRY SHALL BE DESIGNED EMPLOYING ASTM C404 AGGREGATE AND PROPORTIONED PER ASTM C478 (COURSE) TO PROVIDE A MINIMUM 28 DAY STRENGTH OF 2500 PSI AND A SLUMP OF 8 INCHES.
- AT ALL 6" AND 8" CMU WALLS, PROVIDE STANDARD LADDER-TYPE HORIZONTAL MASONRY JOINT REINFORCEMENT WITH MINIMUM WIRE TIE SIZES OF W1.7 DIAMETER AT ALTERNATE COURSES (16" o.c. MAX).
- DESIGN OF REINFORCED MASONRY IS BASED ON VALUES ALLOWED FOR FIELD INSPECTED MASONRY CONSTRUCTION. CAREFUL PLACEMENT OF REINFORCING STEEL AND GROUT, AND SPECIAL CONCERN FOR JOINTING AND CONSTRUCTION TECHNIQUES IS CRITICAL TO PROPER PERFORMANCE OF THIS MASONRY CONSTRUCTION. MASONRY CONSTRUCTION IS TO BE SPECIAL INSPECTED PER THE 2007 CALIFORNIA BUILDING CODE.
- VERTICAL CONTROL JOINTS SHALL BE 3/8 INCH WIDE OR AS SPECIFIED ON THE DRAWINGS AND FULL HEIGHT OF WALL AT LOCATIONS SHOWN ON THE ARCHITECTURAL DRAWINGS. JOINTS SHALL BE SPACED AT A MAXIMUM OF 30'-0" APART AND COORDINATED WITH THE ARCHITECT. ALL HORIZONTAL JOINT REINFORCING SHALL BE DISCONTINUOUS AT MASONRY CONTROL JOINTS.
- CONCRETE BLOCK VENEER WALLS: PROVIDE HORIZONTAL JOINT REINFORCING WITH ONE W1.7 DIAMETER WIRE AT ALTERNATE COURSES (16" MAX.) WITH "HOOK AND EYE" TIES OR DOVETAIL ANCHORS BETWEEN THE 4" BLOCK VENEER AND SUPPORTING SUBSTRATES SPACED 16" O.C. VERTICALLY AND 18" O.C. MAX HORIZONTALLY.
- SHORE ALL BOND BEAM MASONRY LINTELS UNTIL GROUT HAS REACHED THE MINIMUM SPECIFIED 28 DAY STRENGTH.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	80	2.0	135	316
BRENT N. BONHAM			10/23/2009		
REGISTERED CIVIL ENGINEER			DATE		
PLANS APPROVAL DATE					
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.					
BAY AREA TOLL AUTHORITY 101 EIGHTH STREET OAKLAND, CA 94607-4700					
HOWARD, NEEDLES, TAMMEN & BERGENOFF CALIFORNIA ARCHITECTS, P.C. ONE BUNKER HILL BUILDING 601 WEST 5TH STREET, SUITE 1010 LOS ANGELES, CALIFORNIA 90071					



SFOBB TOLL OPERATIONS BLDG BRIDGE NO. 33M5785	
STRUCTURAL GENERAL NOTES	SHEET S-001

ISSUED FOR BID 3/10/10

DATE PLOTTED => 10/19/09
\$DATE
TIME PLOTTED => \$TIME

Drawing Name: S002-structural_general_notes.dwg Layout: S002 @ 1/2"=1'-0" PROJECT: 33M5785_SFOBB(StructDwg)
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REVISED BY	DATE REVISED	CALCULATED-DESIGNED BY	CHECKED BY	CONSULTANT FUNCTIONAL SUPERVISOR	BAY AREA TOLL AUTHORITY

E. REINFORCING STEEL

- REINFORCING STEEL SHALL BE IN ACCORDANCE WITH ASTM A706 SPECIFICATIONS, GRADE 60.
- WELDED WIRE FABRIC REINFORCING SHALL BE IN ACCORDANCE WITH ASTM A185. FLAT SHEETS ONLY. LAP ENDS AND EDGES OF SHEETS MINIMUM OF 6". ALL REINFORCEMENT IN TOPPING SLABS SHALL BE EPOXY COATED.
- REINFORCING SHALL BE DETAILED ACCORDING TO THE ACI DETAILING MANUAL, AND BY A LICENSED PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF CALIFORNIA.
- ALL CONTINUOUS REINFORCING IN GRADE BEAMS SHALL BE LAP-SPLICED WITH A CLASS "B" TENSION LAP WITH TOP BARS LAPPED AT MID-SPAN AND BOTTOM BARS LAPPED AT CENTERLINE OF FOUNDATION SUPPORTS.
- SLABS ON GRADE SHALL BE REINFORCED AS INDICATED BELOW, UNLESS NOTED OTHERWISE. LOCATE REINFORCEMENT 2" FROM TOP SURFACE. LAP AS INDICATED BELOW.
5" SLAB: #3 BARS @ 16" O.C. EA. WAY - LAP 16"
- AT ALL INTERIOR SLAB CORNERS, UNLESS SUCH CORNER IS RELIEVED BY A CONSTRUCTION JOINT, ONE #4 X 4'-0" SHALL BE PLACED DIAGONALLY AT THE MID-DEPTH OF THE SLAB.
- FIELD WELDING, CUTTING OR BENDING OF REINFORCEMENT SHALL NOT BE ALLOWED UNLESS NOTED OTHERWISE OR UNLESS PRIOR APPROVAL IS OBTAINED FROM THE ARCHITECT/ENGINEER.
- COLUMN DOWELS AND ANCHOR BOLTS SHALL BE ACCURATELY LOCATED, SET WITH TEMPLATES, AND SHALL BE PROTECTED FROM CONSTRUCTION ACTIVITY UNTIL THE STRUCTURE ABOVE IS IN PLACE. INSERTING DOWELS OR ANCHOR BOLTS INTO PARTIALLY HARDENED CONCRETE IS PROHIBITED.
- PROVIDE CORNER BARS TO LAP WITH AND TO MATCH SIZE AND SPACING OF ALL HORIZONTAL BARS (INCLUDING, BUT NOT LIMITED TO, WALLS, BEAMS, GRADE BEAMS, BOND BEAMS, FOOTINGS, ETC.). UNLESS OTHERWISE INDICATED.
- PROVIDE 3" SBP (CONT. BOTTOM PLATE) AT 48" MAXIMUM CENTERS FOR POSITIONING ALL FOOTING BARS AND GRADE BEAM BOTTOM BARS, UNLESS OTHERWISE INDICATED.
- REINFORCING BARS TO BE WELDED MUST EITHER MEET ASTM A706 (AND BE ACCOMPANIED BY APPROPRIATE MILL TEST REPORTS), OR SHOULD BE ASSUMED TO HAVE A C.E. (CARBON EQUIVALENT) GREATER THAN 0.75, FOR DETERMINATION OF PROPER WELDING PROCEDURES. WELDING OF REINFORCING BARS TO BE DONE IN ACCORDANCE WITH CURRENT AWS CODES.
- REINFORCING STEEL SHALL BE CONTINUOUS AND LAPPED WITH CLASS B TENSION LAP SPICE, UNLESS OTHERWISE NOTED. MECHANICAL SPLICES MAY BE USED AT THE CONTRACTORS OPTION (UNLESS SPECIFICALLY INDICATED AS LAP SPICE)
- LAP BARS ONLY AT LOCATIONS SHOWN ON THE DRAWINGS, OR AS APPROVED IN ADVANCE BY THE ENGINEER.
- MECHANICAL SPLICES AND EMBEDDED DOWELS WITH MECHANICAL SPLICES SHALL BE AS MANUFACTURED BY BARLOCK (MBT) COUPLERS, OR LENTON THREADED COUPLERS. MECHANICAL SPLICES SHALL DEVELOP 125% OF THE SPECIFIED YIELD STRENGTH OF THE REINFORCING BAR PER ACI REQUIREMENTS.
- COVER ON REINFORCING SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED ON DRAWINGS. REINFORCEMENT EXPOSED TO EARTH IN A CORROSIVE ENVIRONMENT.
 - 3 1/2" PLACED DIRECTLY AGAINST EARTH.
 - 2 1/2" CONCRETE CAST AGAINST FORMS TO BE EXPOSED TO EARTH OR WEATHER FOR BEAMS AND COLUMNS.
 - 2" CONCRETE CAST AGAINST FORMS TO BE EXPOSED TO EARTH OR WEATHER FOR SLABS AND WALLS.
 - 2 1/2" COLUMNS AND PILASTER (TO TIES).
 - 2" WALLS.
 - 1" CLEAR TO TOP REINFORCEMENT FOR SLABS ON GRADE.
 - 3/4" CLEAR TO BOTTOM REINFORCEMENT FOR SLABS ON DECK.
 - 3/4" CLEAR TO TOP REINFORCEMENT IN ELEVATED SLABS ON DECK.
 - 2" CLEAR TO TOP REINFORCEMENT IN BEAMS.
- FAN MAIN REINFORCING AROUND OPENINGS IN STRUCTURAL SLABS. DO NOT FIELD CUT BARS UNLESS STRUCTURAL ENGINEER'S APPROVAL IS OBTAINED.
- FOR ALL VERTICAL BARS PROVIDE MATCHING DOWELS IN FOUNDATIONS WITH STANDARD HOOKS (PER ACI) AND LAP A MINIMUM CLASS "B" TENSION LAP SPICE WITH THOSE VERTICAL BARS, UNLESS SPECIFICALLY SHOWN OTHERWISE.
- PROVIDE ADEQUATE BAR SUPPORT FOR ALL REINFORCEMENT IN BEAMS. SLABS ON GRADE, SLABS ON FORM DECK, CAPS ETC. TO MAINTAIN PROPER BAR OR MESH POSITION DURING CONSTRUCTION.
- PROVIDE 500 POUNDS OF ADDITIONAL REINFORCEMENT, OVER AND ABOVE THE REQUIREMENTS SHOWN ON PLANS OR CONTAINED IN SPECIFICATIONS. THIS EXTRA REINFORCEMENT SHALL BE INSTALLED DURING THE COURSE OF CONSTRUCTION AT LOCATIONS AND IN FABRICATED SHAPES AND SIZES AS DIRECTED BY THE ENGINEER.

REINFORCING BAR LAP SPICE LENGTHS

ALL REINFORCING BAR LAP SPICE LENGTHS SHALL BE CLASS B UNLESS NOTED OTHERWISE. STAGGER ALL SPLICES A MINIMUM OF 12" BUT NOT LESS THAN 12". ALL DIMENSION INDICATED IN TABLE BELOW ARE IN INCHES. BUNDLED BAR SPLICES - INDIVIDUAL BARS SPLICES WITH IN BUNDLES SHALL BE STAGGERED AND LAP SHALL BE INCREASED 20% FOR A 3 BAR BUNDLE AND 33% FOR A 4 BAR BUNDLE. REFERENCE TABLE BELOW FOR DEFINITION OF SPLICE CATEGORIES, FOR BARS NOT QUALIFYING FOR CATEGORY "I" MULTIPLY TABULATED VALUES BY 1.5. IF CONCRETE CONTAINS LIGHT WEIGHT AGGREGATES MULTIPLY TABULATED VALUES BY 1.3 IF REINFORCEMENT IS EPOXY COATED MULTIPLY TABULATED VALUES BY 1.2 WHEN COVER IS GREATER THAN 3/4" AND SPACING IS GREATER THAN 8" MULTIPLY BY 1.5 FOR ALL OTHER CASES. ALL APPLICABLE FACTORS ABOVE SHALL BE MULTIPLIED TOGETHER AND THEN MULTIPLIED TO TABULATED VALUE BELOW TO OBTAIN REQUIRED LAP LENGTH. BARS GREATER THAN #11 SHALL BE MECHANICALLY SPLICED.

CLASS A	#3	#4	#5	#6	#7	#8	#9	#10	#11
TOP BAR REINFORCEMENT (MORE THAN 12" OF CONCRETE CAST BELOW DEVELOPED BARS)									
f _c = 4000	18	25	31	37	54	62	70	78	87
f _c = 5000	17	22	28	33	48	55	62	70	78
BOTTOM BAR REINFORCEMENT (LESS THAN 12" OF CONCRETE CAST BELOW DEVELOPED BARS)									
f _c = 4000	14	19	24	28	42	47	54	60	67
f _c = 5000	13	17	21	25	37	42	48	54	60

CLASS B	#3	#4	#5	#6	#7	#8	#9	#10	#11
TOP BAR REINFORCEMENT (MORE THAN 12" OF CONCRETE CAST BELOW DEVELOPED BARS)									
f _c = 4000	24	32	40	48	70	80	90	102	113
f _c = 5000	22	29	36	43	63	72	81	91	101
BOTTOM BAR REINFORCEMENT (LESS THAN 12" OF CONCRETE CAST BELOW DEVELOPED BARS)									
f _c = 4000	18	25	31	37	54	62	70	78	87
f _c = 5000	17	22	28	33	48	55	62	70	78

DEFINITION OF CATEGORIES

CONCRETE COVER	CENTER TO CENTER SPACING	CATEGORY
GREATER THAN 1 x ϕ	GREATER THAN 3 x ϕ (2" CLEAR)	I
GREATER THAN 1 x ϕ	GREATER THAN 2 x ϕ (1" CLEAR) AND PROVIDE MINIMUM TIES OR STRIPS ALONG SPICE	I
ALL OTHER		II

REQUIREMENTS TO USE BASIC L _c	[SATISFY (1) OR (2)]	OTHERWISE USE ALTERNATE L _c								
#3	#4	#5	#6	#7	#8	#9	#10	#11	#14	
1) min cr covt	0.375	0.500	0.625	0.750	0.875	1.000	1.128	1.270	1.410	1.693
1) min spacing	0.375	0.500	0.625	0.750	0.875	1.000	1.128	1.270	1.410	1.693
1) Strips or ties throughout id not less than the code minimum										
2) min cr covt	0.375	0.500	0.625	0.750	0.875	1.000	1.128	1.270	1.410	1.690
2) min spacing	0.750	1.000	1.250	1.500	1.750	2.000	2.250	2.540	2.820	3.386

F. STRUCTURAL STEEL:

- ALL BEAM CONNECTIONS SHALL BE SELECTED FROM CONNECTION TABLES ON THE DRAWINGS. FOR AMBIGUITIES OR CONNECTION CONFIGURATIONS NOT SHOWN ON THE DOCUMENTS CONSULT THE STRUCTURAL ENGINEER. IF THE FABRICATOR DESIRES TO SUBMIT AN ALTERNATE CONNECTION FROM THAT SHOWN, COMPLETE CALCULATIONS, PREPARED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER, REGISTERED IN THE STATE OF CALIFORNIA SHALL BE SUBMITTED WITH THE FABRICATION SHOP DRAWINGS.
- STRUCTURAL STEEL SHALL MEET THE AISC "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS" DATED MARCH 9, 2005, FROM THE THIRTEENTH EDITION OF THE AISC MANUAL OF STEEL CONSTRUCTION.
- ALL STRUCTURAL STEEL SHALL MEET ASTM A992, GRADE 50, EXCEPT ANGLES AND PLATES SHALL MEET ASTM A36, UNLESS NOTED OTHERWISE. STRUCTURAL TUBING SHALL MEET ASTM A500, GRADE B, F_y = 46 KSI. STRUCTURAL PIPE SHALL MEET ASTM A501 OR ASTM A53, TYPE E OR S, GRADE B. STAINLESS STEEL SHALL MEET ASTM A276, TYPE 304, CLASS A.
- ALL BOLTED BEAM AND COLUMN CONNECTIONS SHALL BE MADE WITH A325 BOLTS AND ACCESSORIES, AND ASSUMED TO BE TYPE N, UNLESS OTHERWISE NOTED.
- UNLESS NOTED AS SLIP-CRITICAL, ALL BOLTS SHALL BE TIGHTENED TO A SNUG TIGHT CONDITION SO THAT ALL PLIES ARE FIRMLY IN CONTACT, AND SHALL BE VISUALLY INSPECTED BY A TESTING AGENCY FOR CONFORMANCE.
- ALL BOLTS INDICATED AS SLIP CRITICAL (SC) SHALL BE FURNISHED WITH COMPRESSIBLE WASHER TYPE DIRECT TENSION INDICATORS MEETING OR EXCEEDING ASTM F959.
- ALL BOLTS SET IN CONCRETE SHALL BE FURNISHED WITH DOUBLE NUTS AND SHALL BE SET WITH A TEMPLATE. BOLTS INDICATED AS ANCHOR BOLTS (AB) SHALL CONFORM TO ASTM F1554, GRADE 36, UNLESS NOTED OTHERWISE. THREADED RODS SHALL BE ASTM A36.
- WELDING - ALL WELDING SHALL BE IN ACCORDANCE WITH THE LATEST STRUCTURAL WELDING CODE AWS D1.1. AND AWS D1.6 FOR STAINLESS STEEL.
- A SPECIAL INSPECTOR WILL BE RETAINED BY THE OWNER TO PERFORM INSPECTIONS OF WELDING AND HIGH STRENGTH BOLTING OPERATIONS AS REQUIRED BY THE 2007 CALIFORNIA BUILDING CODE AND AS DIRECTED BY THE GOVERNING BUILDING OFFICIAL.
- SEE ARCHITECTURAL DRAWINGS FOR STAIR FRAMING AND LOCATIONS OF STAIR SUPPORT AND DESIGN INTENT. THE ARCHITECT SHALL BE NOTIFIED OF ANY DEVIATIONS FROM THE DESIGN INTENT. ALL ADDITIONAL COSTS FOR DEVIATIONS OF STAIR FRAMING AND DESIGN INTENT SHALL BE BORNE BY THE CONTRACTOR. SUBMIT DESIGN CALCULATIONS ALONG WITH STAIR SHOP DRAWINGS FOR REVIEW. CALCULATIONS SHALL BE SEALED BY A LICENSED PROFESSIONAL ENGINEER, REGISTERED IN THE STATE OF CALIFORNIA. STAIR CONTRACTOR SHALL ENGAGE A PROFESSIONAL ENGINEER TO FULLY DESIGN ALL STAIRS, INTERMEDIATE LANDINGS AND ADDITIONAL POSTS OR HANGERS AS NEEDED TO SUPPORT INTERMEDIATE LANDINGS.
- SEE ARCHITECTURAL PLANS FOR FIRE PROOFING REQUIREMENTS.
- WHERE LONG SLOTTED HOLES ARE NOTED ON DRAWINGS, PROVIDE PLATE WASHERS PER AISC SPECIFICATION J3.2.
- E70XX ELECTRODES SHALL BE USED FOR ALL WELDING. ELECTRODES USED FOR FULL PENETRATION WELDED MOMENT CONNECTIONS SHALL MEET CVN TOUGHNESS CRITERIA OF 20 FOOT POUNDS AT -20° F.

- NO COLUMN OR BEAM SPLICES, UNLESS CLEARLY INDICATED ON STRUCTURAL DRAWINGS, WILL BE ALLOWED WITHOUT WRITTEN APPROVAL OF STRUCTURAL ENGINEER.
- ALL STEEL NOT PROTECTED FROM WEATHER AND WHOLLY WITHIN A CONDITIONED SPACE SHALL BE HOT DIPPED GALVANIZED PER ASTM A123.
- FOR WELDING GALVANIZED STEEL, AWS APPROVED PROCEDURES FOR WELDING GALVANIZED STEEL MUST BE ADHERED TO, INCLUDING REMOVAL OF GALVANIZED COATING ON SURFACES TO BE WELDED OR FIELD CERTIFICATION OF PROCEDURES TO WELD THROUGH GALVANIC COATING.
- REPAIR SURFACES WHERE GALVANIC COATING HAS BEEN DAMAGED WITH 2 COATS OF "BRUSH ON" ZINC ENRICHED PAINT PER ASTM A780.
- ALL OPENINGS IN THE ROOF SHALL BE FRAMED WITH A 4X4X1/4 ANGLE MINIMUM, UNLESS NOTED OTHERWISE. ALL MECHANICAL UNITS SHALL BE SUPPORTED WITH STRUCTURAL STEEL FRAMES AS REQUIRED. IF FRAMING IS NOT SHOWN FOR MECHANICAL UNITS, NOTIFY THE ENGINEER.
- GROUT UNDER COLUMN BASE PLATES WITH 1 1/2" MINIMUM NON-SHRINK GROUT, UNLESS OTHERWISE NOTED.
- HORIZONTAL FORCES ALONG WITH VERTICAL FORCES SHOWN ON THE CONTRACT DRAWINGS SHALL BE CONSIDERED IN THE DESIGN OF THE CONNECTION BETWEEN BEAMS AND COLUMNS.
- THE "UNIFORM FORCE METHOD" CONTAINED IN VOLUME 11 "CONNECTIONS" HAS BEEN USED FOR THE DESIGN OF BRACED FRAME CONNECTIONS.

G. METAL DECK:

- METAL FLOOR DECK:** COMPOSITE METAL FLOOR DECK SHALL BE 3", GALVANIZED VULCRAFT TYPE "VL" (OR EQUAL) CONTINUOUS OVER 3 SPANS. METAL DECK IS DESIGNED FOR DIAPHRAGM ACTION AND SHALL BE FASTENED USING 5/8" EFFECTIVE DIAMETER PUDDLE WELDS TO ALL SUPPORTS PERPENDICULAR TO SPAN PER DECK INSTITUTE 38/4 FASTENING PATTERN X-X-X-X. WELD DECK TO ALL SUPPORTS PARALLEL TO DECK SPAN AT 12" O.C. SIDE LAPS SHALL BE (4) #10 SCREW FASTENERS BETWEEN SUPPORTS, 36" O.C. MAX.
 - GAUGE: 20
 - MINIMUM YIELD STRENGTH: 33 KSI
 - THICKNESS: 0.036 IN
 - SECTION MODULES: 0.534 IN 3FT
 - MOMENT OF INERTIA: 0.896 IN 4FT
- METAL ROOF DECK:** METAL ROOF DECK SHALL BE 1 1/2", WIDE RIB, GAUGE AS INDICATED, CONTINUOUS OVER 3 OR MORE SPANS. ALL ROOF DECK SHALL BE GALVANIZED PER ASTM A525, G60. METAL ROOF DECK IS DESIGNED FOR DIAPHRAGM ACTION AND SHALL BE FASTENED USING 5/8" EFFECTIVE DIAMETER PUDDLE WELDS TO ALL SUPPORTS PER PATTERN INDICATED ON PLANS. SIDE LAPS SHALL BE AS INDICATED ON PLANS.
 - GAUGE: 18
 - MINIMUM YIELD STRENGTH: 33 KSI
 - THICKNESS: 0.0478 IN
 - SECTION MODULES: 0.322 IN 3FT
 - MOMENT OF INERTIA: 0.302 IN 4FT

H. COLD-FORMED METAL FRAMING:

- THE DESIGN OF THE LIGHT GAUGE METAL FRAMING IS THE RESPONSIBILITY OF THE MANUFACTURER AND THE MANUFACTURE SHALL PROVIDE CALCULATIONS SEALED BY A LICENSED PROFESSIONAL ENGINEER REGISTERED IN CALIFORNIA FOR ALL LIGHT GAUGE STEEL STUDS, COMPONENTS, JOISTS, CONNECTIONS, ETC. WHERE SHOWN, SIZES, GAUGES AND FASTERS SHALL BE CONSIDERED AS THE MINIMUM ALLOWED.
- METAL FRAMING COMPONENTS SHALL BE FABRICATED OF STRUCTURAL QUALITY STEEL WITH A MINIMUM YIELD STRESS OF 33,000 PSI, FOR 18 GAUGE AND LIGHTER, 50,000 PSI, FOR 16 GAUGE AND HEAVIER, AND SHALL CONFORM TO ASTM A448, A570, OR A611, OR AS INDICATED ON THE PLANS AND SECTIONS.
- METAL STUDS SHALL BE "C" SHAPED WITH MINIMUM 1 5/8" WIDE FLANGES AND 1/2" RETURNS UNLESS NOTED OTHERWISE ON DRAWINGS.
- INSTALLATION OF STUDS SHOULD BE AS PER METAL LATH/STEEL FRAMING ASSOCIATION - LIGHT WEIGHT STEEL FRAMING SYSTEMS MANUAL, THIRD EDITION
- ALL METAL STUD WALLS OR SOFFIT AND ROOF PANEL FRAMING TO HAVE 16 GAUGE UNPUNCHED TRACKS TOP AND BOTTOM.
- ALL STRUCTURAL STUDS SHALL BE SEATED FIRMLY AND SQUARELY AGAINST THE INSIDE TRACK WEB. ANCHOR BOTH FLANGES TO TRACK WITH (2) #10 SELF-DRILLING SCREWS (1 EACH FLANGE), UNLESS NOTED OTHERWISE ON DRAWINGS.
- BRIDGING FOR WALLS TO BE MANUFACTURERS STANDARD BRIDGING (1 1/2"x16 GAUGE MINIMUM COLD ROLLED CHANNEL). PROVIDE AT 1/3 POINTS OR 4'-0" CENTERS MAXIMUM UNLESS OTHERWISE INDICATED. INSTALL PER MANUFACTURERS RECOMMENDATIONS AND DETAILS.
- PROVIDE ALL MISCELLANEOUS ACCESSORIES AS PER MANUFACTURERS SPECIFICATIONS AND RECOMMENDATIONS. ERECT WALL SYSTEMS PER MANUFACTURERS SPECIFICATIONS, RECOMMENDATIONS AND DETAILS, UNLESS OTHERWISE INDICATED ON DRAWINGS.
- PROVIDE ALL SLIDE CLIPS AND DEFLECTION SLIDE TRACKS AS INDICATED ON THE DRAWINGS TO ALLOW MOVEMENT OF THE SUPERSTRUCTURE RELATIVE TO THE STUD WALL SYSTEM.
- MINIMUM 10" OF UNPUNCHED STEEL LENGTH REQUIRED AT BOTH ENDS OF MEMBERS INCLUDING WALL STUDS. WHEN FIELD CUTTING REDUCES THIS MINIMUM 10" UNPUNCHED STEEL, WEB STIFFENING MAY BE REQUIRED PER THE STUD MANUFACTURERS RECOMMENDATIONS.
- JOISTS MUST HAVE A MINIMUM OF 10" UNPUNCHED STEEL LENGTH FROM BEARING POINTS.
- DOUBLE STUDS EACH SIDE OF OPENINGS IN WALLS OR HORIZONTAL PANELS UNLESS MORE STRINGENT REQUIREMENTS ARE SHOWN ON THESE DRAWINGS, OR RECOMMENDED BY THE LIGHT GAUGE FRAMING MANUFACTURER.

I. MISCELLANEOUS MECHANICAL, PLUMBING AND ELECTRICAL ANCHORAGES AND ELECTRICAL CONDUITS:

- ELECTRICAL CONDUIT SHALL BE INSTALLED BELOW THE CONCRETE FLOOR STRUCTURE WHERE POSSIBLE. WHERE CONDUIT MUST BE INSTALLED IN, OR WHERE CONDUIT MUST PENETRATE THE CONCRETE STRUCTURE, THE FOLLOWING GUIDELINES MUST BE FOLLOWED:
 - CONDUIT LOCATION AND PLACEMENT SHALL BE APPROVED BY THE ARCHITECT/ENGINEER PRIOR TO PLACING OF CONCRETE.
 - USE MAXIMUM 1/2" DIAMETER STEEL OR PVC CONDUIT, NO ALUMINUM OR COPPER.
 - AT LOCATIONS WHERE CONDUIT ENTERS CONCRETE, USE RIGID STEEL CONDUIT.
 - WHERE VERTICAL CONDUIT PASSES THROUGH CONCRETE, USE GALVANIZED PIPE SLEEVES AT LEAST 1/2" DIAMETER LARGER THAN THE CONDUIT EMBEDDED IN THE CONCRETE.
 - WHERE CONDUIT INTERFERES WITH HEADED STUDS OF EMBED PLATES OR COMPOSITE BEAMS, THE CONDUIT SHALL BE MOVED TO CLEAR THE HEADED STUDS BY A MINIMUM OF 6 INCHES.
 - CONDUIT PLACED IN SLABS SHALL BE PLACED IN STRAIGHT LINES (A MINIMUM OF 12" O.C.) AND SHALL CROSS JOISTS AND BEAMS PERPENDICULAR TO THEIR SPANS. CONDUIT SHALL ONLY PENETRATE THE SLABS VERTICALLY.
 - CONDUIT GROUPS (PER NOTE F) RUNNING PARALLEL TO BEAMS SHALL BE PLACED A MINIMUM OF 2'-0" FROM THE CENTERLINE OF THE BEAM.
 - CONDUIT GROUPS (PER NOTE F) RUNNING PERPENDICULAR TO BEAMS SHALL NOT BE PLACED WITHIN THE MIDDLE 1/3 OF THE BEAM SPANS.
 - CONDUITS SHALL BE SPACED A MINIMUM OF 3" ON CENTER.
 - CONDUITS PLACED PARALLEL TO REBAR SHALL BE LOCATED A MINIMUM OF 3" ON CENTER FROM REINFORCING BARS.
- THE STRUCTURE IS DESIGNED TO SUPPORT THE WEIGHT OF ELECTRICAL AND MECHANICAL UNITS SHOWN. IT IS THE RESPONSIBILITY OF THE ELECTRICAL, PLUMBING AND MECHANICAL CONTRACTOR TO DESIGN, ENGINEER, AND SUPPLY ALL ITEMS USED TO SUPPORT THE EQUIPMENT FROM OR ON THE STRUCTURE, INCLUDING SEISMIC BRACING REQUIRED FOR EQUIPMENT AND PIPING.

J. SUBMITTALS:

- HNTB CORPORATION WILL REVIEW SHOP DRAWINGS AND RELATED SUBMITTALS (AS INDICATED BELOW) WITH RESPECT TO THE ABILITY OF THE DETAILED WORK, WHEN COMPLETE, TO PROPERLY FUNCTION AS AN INTEGRAL ELEMENT OF THE OVERALL STRUCTURAL SYSTEM DETAILED ON THESE DRAWINGS. THIS REVIEW WILL NOT RELIEVE THE CONTRACTOR FROM THE RESPONSIBILITY FOR ERRORS, CORRECTNESS OF DETAILS, OR CONFORMANCE WITH THE CONTRACT. THE CONTRACTOR SHALL ALLOW 10 WORKING DAYS AFTER RECEIPT AT ENGINEER'S OFFICE FOR REVIEW OF ALL STRUCTURAL SUBMITTALS.
 - REVIEW EACH SUBMISSION FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS.
 - REVIEW EACH SUBMISSION FOR CONFORMANCE WITH THE MEANS, METHODS, TECHNIQUES, SEQUENCES, AND OPERATIONS OF CONSTRUCTION; AND SAFETY PRECAUTIONS AND PROGRAMS INCIDENTAL THERETO, ALL OF WHICH ARE THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR.
 - IDENTIFY ANY VARIATION FROM THE CONTRACT DOCUMENTS.
 - REVIEW AND APPROVE EACH COMPLIANT SUBMISSION. NON COMPLIANT SUBMISSIONS SHALL BE RETURNED TO THE SUBCONTRACTOR AND APPROVED SUBMISSIONS SHALL BE STAMPED THIS.
 - THE CONTRACTOR SHALL CLEARLY INDICATE THE SPECIFIC USE(S) FOR EACH SUBMITTAL.
- THE FOLLOWING IS A PARTIAL LIST OF REQUIRED STRUCTURAL SHOP DRAWINGS AND RELATED SUBMITTALS. THE GENERAL CONTRACTOR SHALL REFER TO THE SPECIFICATIONS FOR MORE INFORMATION AND A COMPLETE LIST OF REQUIRED SUBMITTALS:
 - ANCHOR BOLT LAYOUT DRAWINGS.
 - CONCRETE MIX DESIGNS, TESTS AND MATERIAL CERTIFICATIONS.
 - CONCRETE AND MASONRY REINFORCING SHOP DRAWINGS, REINFORCING MATERIAL CERTIFICATIONS.
 - CMU MATERIAL CERTIFICATIONS, GROUT MIX DESIGN AND MORTAR MIX DESIGN.
 - STRUCTURAL STEEL FABRICATION DRAWINGS AND STRUCTURAL STEEL MILL CERTIFICATES.
 - WELD PROCEDURES & WELDERS CERTIFICATES AND WELDING QUALITY CONTROL PLAN.
 - DECK SHOP DRAWINGS AND DECK FASTENING
 - LIGHT GAUGE STEEL FRAMING, CALCULATIONS, CONNECTIONS AND SHOP DRAWINGS INCLUDING STANDARD DETAILS, BRACING AND BRIDGING REQUIREMENTS, AND MATERIAL CERTIFICATIONS.
- DEFERRED SUBMITTALS: SUBMIT THE FOLLOWING ITEMS AS DEFERRED SUBMITTALS:
 - TEMPORARY EARTH-RETAINING SHORING SYSTEMS
 - REINFORCING OF PRECAST CONCRETE PILE COMPONENTS
 - COLD-FORMED METAL FRAMING COMPONENTS, ASSEMBLIES, AND CONNECTION DESIGN
 - STEEL STAIRS AND RAILINGS
 - ANCHORAGE AND BRACING OF MECHANICAL AND ELECTRICAL EQUIPMENT

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	80	2.0	136	316

BRENT N. BONHAM 10/23/2009
REGISTERED CIVIL ENGINEER DATE



PLANS APPROVAL DATE
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

BAY AREA TOLL AUTHORITY
101 EIGHTH STREET
OAKLAND, CA 94607-4700
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CALIFORNIA ARCHITECTS, P.C.
ONE BUNKER HILL BUILDING
601 WEST 5TH STREET, SUITE 1010
LOS ANGELES, CALIFORNIA 90071

SFOBB TOLL OPERATIONS BLDG
BRIDGE NO. 33M5785
STRUCTURAL GENERAL NOTES

SHEET S-002



BRENT N. BONHAM 10/23/2009
REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE _____

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ONE BUNKER HILL BUILDING
601 WEST 5TH STREET, SUITE 1010
LOS ANGELES, CALIFORNIA 90071



K. SPECIAL INSPECTION:

General Seismic Resistance -- Special Inspections Required for these assemblies and trades			
Req'd	Verification and Inspection Task	Continuous	Periodic
X	Seismic Resistance (1707.1) as follows:		
X	Structural Steel (1707.2)	X	
N/A	Structural Wood (1707.3)		
	Cold Formed Steel Framing (1707.4)		
X	a. Inspect and verify fastening and anchorage of metal framing only at areas supporting skylights.		X
N/A	Drilled Pier Foundations (1707.5)		
X	Storage Racks & Access floors (1707.6)		X
	Architectural components (1707.7)		
X	a. Interior masonry partition walls.		X
X	b. Interior vault walls.		X
	Mechanical & electrical components (1707.8)		
X	a. Anchorage of electrical equipment for emergency and standby power.		X
N/A	b. Anchorage of other electrical equipment.		
N/A	c. Installation of piping systems intended to carry flammable, combustible, or highly toxic contents, and their associated mechanical units.		
N/A	d. HVAC ductwork containing hazardous materials.		
N/A	e. Vibration isolation systems where there is a required clearance of 0.25 inches or less between the equipment frame and restraints.		
	Designated Seismic System Verifications for Mechanical and Electrical Equipment (1707.9 and 1708.5)		
X	a. Labels, anchorage and mounting requirements conform to certificates of compliance.		X
N/A	Seismic Isolation System (1707.10)		
Structural Steel Construction -- Special Inspections:			
Req'd	Verification and Inspection	Continuous	Periodic
X	1. Material verification of high-strength bolts, nuts and washers:		
X	a) Identification markings to conform to ASTM standards specified in the approved construction documents.		X
X	b) Manufacturers certificate of compliance required.		X
X	2. Inspection of high-strength bolting:		
X	a) Bearing-type bolt connections.	X	X
X	b) Pre-tensioned and Slip-critical connections.	X	X
X	3. Material verification of structural steel:		
X	a) Identification markings to conform to ASTM standards specified in the approved construction documents.		X
X	b) Manufacturers' certified mill test reports.		X
X	4. Material verification of weld filler materials:		
X	a) Identification markings to conform to AWS specification in the approved construction documents.		X
X	b) Manufacturers' certified mill test reports.		X
X	5. Inspection of welding:		
X	a) Structural Steel:		
X	1) Complete and partial penetration groove welds:		
X	2) Multi-pass fillet welds.	X	
X	3) Single-pass fillet weld >5/16"	X	
X	4) Single-pass fillet welds <= 5/16"		X
X	5) Floor and deck welds.		X
X	b. Reinforcing Steel:		
X	1) Verification of weldability of reinforcing steel other than ASTM A 706.		X
X	2) Reinforcing steel-resisting flexural and axial forces in intermediate and special moment frames, and boundary elements of special reinforced concrete shear walls and shear reinforcement.	X	
X	3) shear reinforcement.	X	
X	4) Other reinforcing steel.		X
X	6. Inspection of steel frame joint details for compliance with approved construction documents:		X
X	a. Details such as bracing and stiffening.		X
X	b. Member locations.		X
X	c. Application of proper joint details at each connection.		X
Concrete Construction -- Special Inspections:			
Req'd	Verification and Inspection	Continuous	Periodic
X	1. Inspection of reinforcing steel and prestressing tendons, and placement in accordance with construction documents and shop drawings.		X
X	2. Inspection of reinforcing steel welding in accordance with table 1704.3, item 5b.	X	
X	3. Inspect bolts to be installed in concrete prior to and during placement of concrete.	X	
X	4. Verify use of required design mix.		X
X	5. At the time fresh concrete is sampled to fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	X	
X	6. Inspection of concrete and shotcrete placement for proper application techniques.	X	
X	7. Inspection for maintenance of specified curing temperature and techniques.		X
	8. Inspection of prestressed concrete:		
	a. Application of prestress forces.	X	
	b. Grouting of bonded prestressing tendons in the seismic force resisting system.	X	
X	9. Erection of precast concrete members.		X
X	10. Verification of in-situ concrete strength prior to removal of shores and forms from beams and structural slabs.		X
X	11. Inspect formwork for shape, location, and dimensions of the concrete member being formed.		X

Masonry Construction -- Level 1 Special Inspections:			
Req'd	Inspection Task	Continuous	Periodic
X	1. As masonry construction begins the following shall be verified to ensure compliance:		
X	a. Proportions of site-prepared mortar.		X
X	b. Construction of mortar joints.		X
X	c. Location of reinforcement, connectors, and anchors.		X
	d. Pre-stressing technique.		
	e. Grade and size pre-stressing tendons and anchorages.		
X	2. The inspection program shall verify:		
X	a. Size and location of structural elements.		X
X	b. Type, size and location of anchors, including other details of anchorage of masonry to structural members, frames or other connection.		X
X	c. Specified size, grade and type of reinforcement.		X
X	d. Welding of reinforcing bars.	X	
X	e. Protection of masonry during cold weather (temperature below 40°) or hot weather (temperature above 90°F).		X
X	3. Prior to grouting, the following shall be verified to ensure compliance:		
X	a. Grout space is clean and free of obstructions.		X
X	b. Placement of reinforcement, connectors, anchors, and prestressing tendons.		X
X	c. Proportions of site-prepared grout, and prestressing grout for bonded tendons.		X
X	d. Construction of mortar joints.		X
X	4. Grout placement shall be verified to ensure compliance with code and construction document provisions.	X	
X	5. Preparation of any required grout specimens, mortar specimens and/or prisms shall be observed.	X	
X	6. Compliance with required inspection provisions of the construction documents and the approved submittals shall be verified.		X
Soils and Earthwork -- Special Inspections			
Req'd	Inspection Task	Continuous	Periodic
X	1. Verify materials below footings are adequate to achieve the design bearing capacity.		X
X	2. Verify excavations are extended to proper depth and have reached proper material.		X
X	3. Perform classification and testing of controlled, compacted, and engineered fill materials.		X
X	4. Verify use of proper materials, densities and lift thicknesses during placement and compaction of controlled, compacted, and engineered fill.	X	
X	5. Prior to placement of controlled, compacted and engineered fill, observe subgrade and verify that the site has been prepared properly.		X
Pile Foundations -- Special Inspections:			
Req'd	Inspection Task	Continuous	Periodic
X	1. Verify pile materials, sizes and lengths comply with the requirements.	X	
X	2. Determine capacities of test piles and conduct additional load tests as required.	X	
X	3. Observe driving operations and maintain complete and accurate records for each pile.	X	
X	4. Verify placement locations and plumbness, confirm type and size of hammer, record number of blows per foot of penetration, determine required penetrations to achieve design capacity, record tip and butt elevations and document any pile damage.	X	
X	5. For steel piles, perform additional inspections in accordance with Section 1704.3.	X	
X	6. For concrete piles and concrete-filled piles, perform additional inspections in accordance with Section 1704.4.	X	
	7. For specialty piles, perform additional inspections as determined by the registered design professional in responsible charge.		
	8. For augered uncased piles and caisson piles, perform inspections in accordance with Section 1704.9.		

- SPECIAL INSPECTIONS ARE TO BE PERFORMED BY QUALIFIED FIRMS OR PERSONNEL AS IDENTIFIED WITHIN THE CONTRACT DOCUMENTS, AND THE 2007 CALIFORNIA BUILDING CODE CHAPTER 17, THE SPECIAL INSPECTORS SHALL MAINTAIN RECORDS OF ALL INSPECTIONS PERTAINING TO THE PORTIONS OF WORK THEY ARE TO INSPECT. PROVIDE COPIES OF REPORTS TO THE OWNER AND ARCHITECT/ENGINEER PERIODICALLY AND AS REQUIRED FOR ADEQUATE COMMUNICATION AS WORK PROGRESSES.
- THE SPECIAL INSPECTOR SHALL MAINTAIN A CURRENT "ERROR LOG" WHICH SHALL TRACK ALL WORK NOT IN COMPLIANCE WITH THE CONTRACT DOCUMENTS, SHALL TRACK WHEN WORK ITEMS NOT IN COMPLIANCE HAVE BEEN CORRECTED OR WHEN ITEMS HAVE BEEN ACCEPTED, IN WRITING, AS CONSTRUCTED BY THE ENGINEER OF RECORD.
- ALL INSPECTIONS CHECKED ABOVE ARE REQUIRED BY THIS CONTRACT. ANY INSPECTIONS DETERMINED "NOT REQUIRED" BY LOCAL CODE OFFICIALS ARE STILL REQUIRED BY THESE DOCUMENTS.

L. STRUCTURAL ABBREVIATIONS:

ADDL	ADDITIONAL	HD	HEAVY DUTY
ADJ	ADJACENT	HDR	HEADER
AFI	ARCH FINISH FLOOR	HORIZ	HORIZONTAL
ALT	ALTERNATE	HP	HIGH POINT
ALUM	ALUMINUM	HSA	HEADED STUD ANCHOR
ANC	ANCHOR	HSB	HIGH STRENGTH BOLT
APPROX	APPROXIMATE	HSS	HOLLOW STRUCTURAL
AR	ANCHOR ROD	ID	INSIDE DIAMETER
ARCH	ARCHITECTURAL	IF	INSIDE FACE
		INT	INTERIOR
BF	BRACE FRAME	JST	JOIST
BLDG	BUILDING	JST BRG	JOIST BEARING
BLKG	BLOCKING	JT	JOINT
BOD	BOTTOM OF DECK		
BODP	BOTTOM OF DRILLED PIER	K	KIP (1000 LBS)
BOT	BOTTOM	LLV	LONG LEG VERTICAL
BM	BEARING	LLH	LONG LEG HORIZONTAL
BRG	BETWEEN	LNTEL	LINE
BTWN		LONGIT	LONGITUDINAL
		LTWT	LIGHT WEIGHT
C-C	CENTER TO CENTER	MAS	MASONRY
CHKD	CHECKED	MAX	MAXIMUM
CHP	CAST IN PLACE	MB	MACHINE BOLTS
CJ	CONSTRUCTION JOINT	MC	MECHANICAL CONTRACTOR
CJ	CONTROL JOINT	MECH	MECHANICAL
CL	CENTER LINE	MFCR	MANUFACTURER
CLR	CLEAR	MIN	MINIMUM
CMU	CONCRETE MASONRY UNIT	MO	MASONRY OPENING
COL	COLUMN	MSE	MECHANICALLY STABILIZED
CONC	CONCRETE	MTL	METAL
CONN	CONNECTION		
CONSTR	CONSTRUCTION	NIC	NOT IN CONTRACT
CONT	CONTINUOUS	NCM	NOMINAL
COR	CORNER	NS	NEAR SIDE
CP	COMPLETE PENETRATION	NTS	NOT TO SCALE
CTR	CENTER		
DBA	DEFORMED BAR ANCHOR	OC	ON CENTER
DBL	DOUBLE	OF	OUTSIDE FACE
DIA	DIAMETER	O/O	OUT TO OUT
DIAG	DIAGONAL	OPNG	OPENING
DIM	DIMENSION	OPP	OPPOSITE
DIR	DIRECTION	OPPHD	OPPOSITE HAND
DN	DOWN		
DTL	DETAIL	P	PLUMBING
DWG	DRAWING	P/C	PRECAST CONCRETE, PRECAST
DWL	DOWEL	PERP	PERPENDICULAR
		PFL	PREMOLDED JOINT FILLER
EA	EACH	PIL	PILASTER
EC	ELECTRICAL CONTRACTOR	PL	PLATE
EF	EACH FACE	PLYWD	PLYWOOD
EJ	EXPANSION JOIST	PREFAB	PREFABRICATED
EL	ELEVATION	PSF	POUNDS PER SQUARE FOOT
ELEV	ELEVATOR	PSI	POUNDS PER SQUARE INCH
ENGR	ENGINEER		
EOS	EDGE OF SLAB	RAD	RADIUS
EQ	EQUAL	RC	REINFORCED CONCRETE
EQ SPA	EQUALLY SPACED	RE	REFERENCE
		REINF	REINFORCEMENT
EQUIP	EQUIPMENT	REQD	REQUIRED
EW	EACH WAY	RET	RETURN
EXIST	EXISTING	RO	ROUGH OPENING
EXPAN	EXPANSION	RST	REINFORCING STEEL
EXT	EXTERIOR		
FAB	FABRICATE	SSP	SLAB BOLSTER WITH PLATE
FB	FLAT BAR	SCHED	SCHEDULE
FCM	FRACTURE CRITICAL MEMBER	SIM	SIMILAR
FD	FLOOR DRAIN	SPA	SPACING
FDN	FOUNDATION	SPEC	SPECIFIED
FF	FINISH FLOOR	SPECS	SPECIFICATIONS
FG	FINISH GRADE	SOG	SLAB ON GRADE
FL	FLOOR	SQ	SQUARE
FOC	FACE OF COLUMN	SSM	SPECIAL STRUCTURAL
FOC	FACE OF CONCRETE		
FOW	FACE OF WALL	SST	STAINLESS STEEL
FP	FIRE PROTECTION	STD	STANDARD
FS	FAR SIDE	STIF	STIFFENER
FTG	FOOTING	STRIP	STRIPS
FV	FIELD VERIFY	STL	STEEL
		STR	STRAIGHT
GA	GAUGE	STRUC	STRUCTURAL STRUCTURES
GALV	GALVANIZE	SUPP	SUPPORT
GB	GRADE BEAM	SYMM	SYMMETRICAL
GC	GENERAL CONTRACTOR		
GEN NOTES	GENERAL NOTES	T&B	TOP AND BOTTOM
GLU	GLULAM	THRD	THREADED
GR	GRADE	THK	THICK
GRITG	GRATING	TOT	TOP OF BEAM
GVL	GRAVEL	TCC	TOP OF CONCRETE
		TOC	TOP OF DECK
		TOOP	TOP OF DRILLED PIER
		TOP	TOP OF FOOTING
		TOW	TOP OF STEEL
		TOW	TOP OF WALL
		TRANS	TRANSVERSE
		TS	STRUCTURAL TUBE
		TYP	TYPICAL
		UNO	UNLESS NOTED OTHERWISE
		VERT	VERTICAL
		WD	WOOD
		WI	WITH
		WO	WITH / OUT
		WP	WORK POINT
		WS	WATER STOP
		WWF	WELDED WIRE FABRIC
		=	APPROXIMATE DIMENSION

Drawing Name: S003-structural_general_notes.dwg Layout: S003 @ 11/24/24 PLOTTED BY: SFOBB/StructDwg1
Last Saved By: JStanton - 10/19/09 11:44am - Printed By: JStanton - 10/21/09 2:35pm

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SFOBB TOLL OPERATIONS BLDG
BRIDGE NO. 33M5785
STRUCTURAL GENERAL NOTES
AND ABBREVIATIONS

SHEET
S-003

ISSUED FOR BID 3/10/10
DATE PLOTTED => 10/19/09
TIME PLOTTED => \$DATE \$TIME

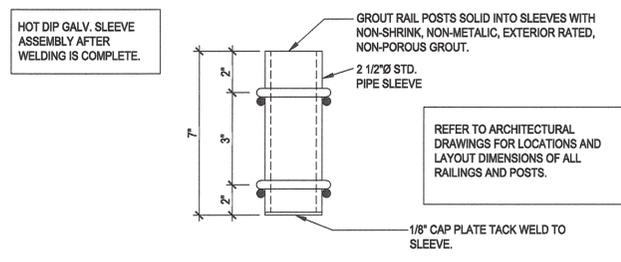
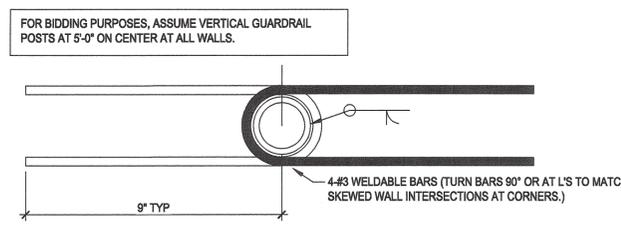
BRENT N. BONHAM 10/23/2009
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 601 WEST 5TH STREET, SUITE 1010
 LOS ANGELES, CALIFORNIA 90071



11 TYP POST SLEEVE EMBED FOR CIP CONC
 S-005 SCALE: NOT TO SCALE

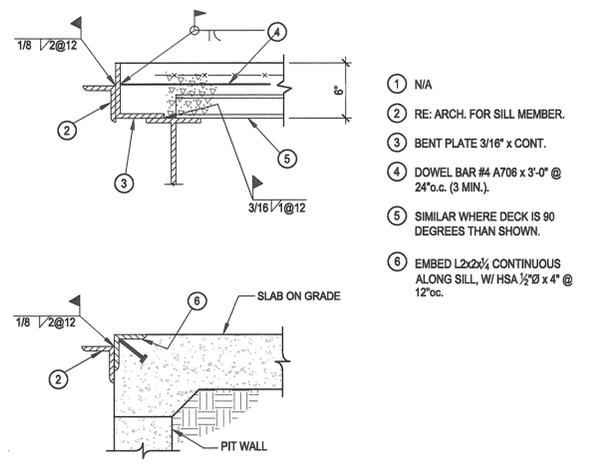
BEAM	MIN N	MAX N
W8, W10	2	2
W12	2	3
W14	2	3
W16	3	4
W18	3	5
W21	4	6

BEAM	MIN N	MAX N
W24	4	7
W27	5	8
W30	5	9
W33	6	10
W36	6	10
W40	6	11

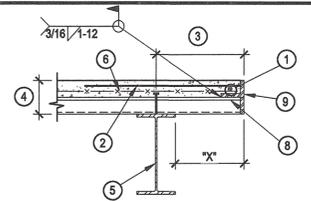
BEAM END CONNECTION GENERAL NOTES:

- FOR BEAMS WITHOUT REACTIONS SHOWN ON THE PLAN, OR FOR BEAMS WITH LARGER COPES THAN SPECIFIED IN THE TABLE ABOVE, IF NO OTHER DETAIL IS SHOWN IN THESE CONTRACT DRAWINGS, THE DETAILER SHALL ASSUME THE MAXIMUM NUMBER OF BOLTS FOR THE BEAM CONNECTION.
- VALUES IN TABLES ARE THE MAXIMUM UNFACTORED VERTICAL REACTIONS THE CONNECTION CAN ADEQUATELY RESIST. FOR FACTORED STRENGTH VALUES (LRFD), MULTIPLY UNFACTORED STRENGTHS BY 1.5. RE: AISC 2005 STEEL CONSTRUCTION MANUAL.
- STRENGTH VALUES ARE PROVIDED FOR GENERAL FLOOR FRAMING CONNECTION DESIGN, ASSUMING LOWER BOUND BEAM SECTION PROPERTIES THAT MAY CONTROL STRENGTH VALUES. ACTUAL STRENGTH VALUES FOR INDIVIDUAL BEAMS LOCATIONS AND CONDITIONS MAY BE HIGHER. DETAILER TO PROVIDE ADDITIONAL CALCULATIONS IF HIGHER STRENGTHS ARE DESIRED.
- STRENGTH VALUES ONLY APPLY TO ASTM A992 WIDE FLANGE SHAPES, W10 OR DEEPER.
- R2 VALUES ARE RESTRICTED BY THE COPE DEPTH VALUES IN THE TABLE ABOVE. TABULATED VALUES SHALL BE REDUCED BY AN ADDITIONAL FACTOR OF 0.75 FOR THE FOLLOWING SHAPES: W10x12, W10x15, W12x14, W12x16.

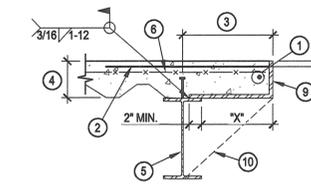
10 BEAM END CONNECTION NOTES FOR ALL CONNECTIONS
 S-005 SCALE: NOT TO SCALE



9 ELEVATOR ENTRANCE EDGE DETAIL
 S-005 SCALE: NOT TO SCALE



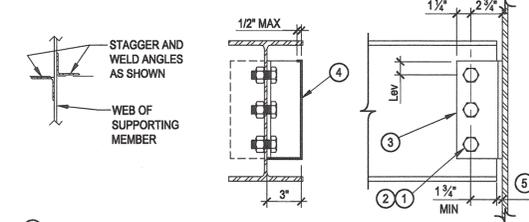
DECK PERPENDICULAR TO SUPPORT



DECK PARALLEL TO SUPPORT

8 SLAB CLOSURE PLATE DETAIL
 S-005 SCALE: NOT TO SCALE

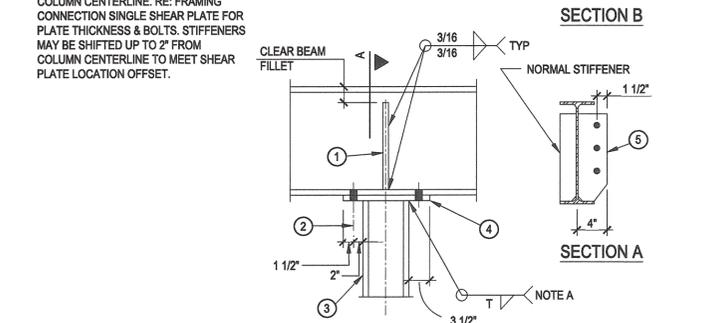
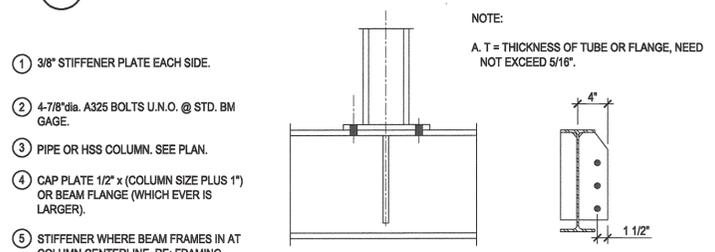
- 1-#4 CONT.
- #4x3'-0" A706 @ 12"oc WELDED TO BENT PLATE
- RE: PLAN FOR DIMENSION.
- SLAB THICKNESS, RE: PLAN.
- STEEL FRAMING SUPPORT, RE: PLAN.
- REINFORCEMENT OR W.W.F., RE: PLANS
- NOT USED.
- 20 GAGE CLOSURE PLATE. TACK WELD TO DECK.
- 3/8" CONT BENT PLATE
- FOR "X">11" USE WITH SHORING.



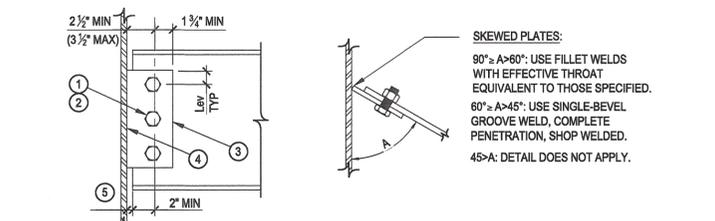
CONNECTION STRENGTH TABLE (UNFACTORED) SEE 10/S005 FOR ADD'L NOTES

N (6) BOLTS	R1 (7) KIPS	R2 (8) KIPS	R3 (9) KIPS
2	23	16	6
3	35	24	10
4	49	40	20
5	62	60	40
6	74	74	66
7	86	86	86
8	98	98	98
9	110	110	110
10	123	123	123
11	135	135	135

5 SINGLE ANGLE CONNECTION DETAIL
 S-005 SCALE: NOT TO SCALE



7 STIFFENER DETAIL
 S-005 SCALE: NOT TO SCALE

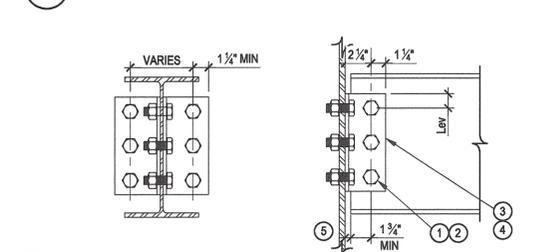


SKEWED PLATES:
 90° > A>60°: USE FILLET WELDS WITH EFFECTIVE THROAT EQUIVALENT TO THOSE SPECIFIED.
 60° > A>45°: USE SINGLE-BEVEL GROOVE WELD, COMPLETE PENETRATION, SHOP WELDED.
 45°-A: DETAIL DOES NOT APPLY.

CONNECTION STRENGTH TABLE (UNFACTORED) SEE 10/S005 FOR ADD'L NOTES

N (6) BOLTS	R1 (7) KIPS	R2 (8) KIPS	R3 (9) KIPS
2	26	15	6
3	39	24	10
4	52	40	20
5	65	60	40
6	78	78	66
7	91	91	91
8	104	104	104
9	116	116	116
10	128	128	128
11	140	140	140

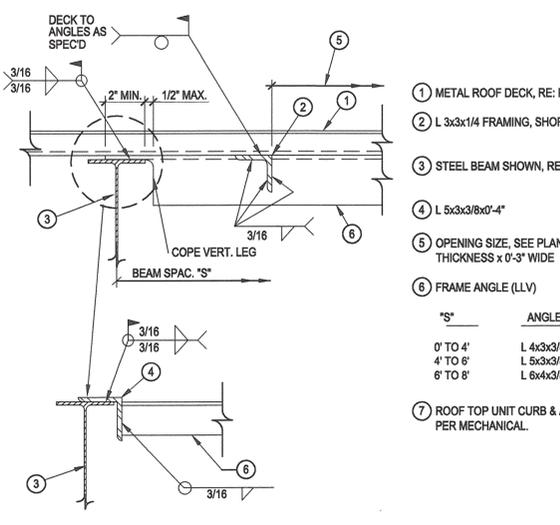
6 SINGLE SHEAR PLATE CONNECTION DETAIL
 S-005 SCALE: NOT TO SCALE



CONNECTION STRENGTH TABLE (UNFACTORED) SEE 10/S005 FOR ADD'L NOTES

N (6) BOLTS	R1 (7) KIPS	R2 (8) KIPS	R3 (9) KIPS
2	31	15	6
3	47	24	10
4	68	40	20
5	94	60	40
6	125	83	66
7	170	110	100
8	194	146	148
9	219	168	160
10	243	220	200
11	267	267	267

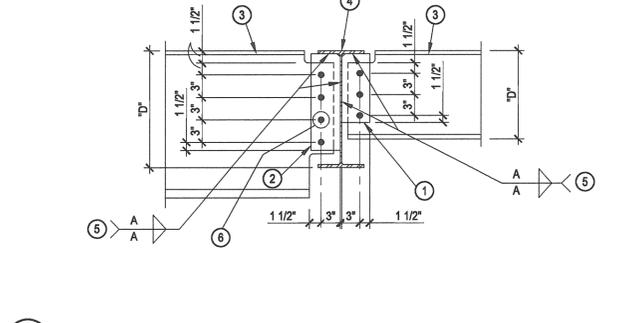
4 DOUBLE ANGLE CONNECTION DETAIL
 S-005 SCALE: NOT TO SCALE



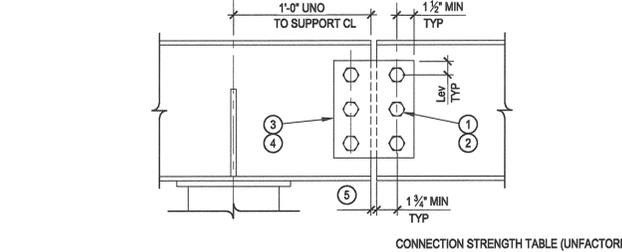
OPTIONAL END CONDITION

3 TYPICAL ROOF OPENING DETAIL
 S-005 SCALE: NOT TO SCALE

- RE: TYPICAL FRAMING CONN. (UNO) ON PLAN.
- RE: SINGLE SHEAR PLATE CONNECTION, (UNO) ON PLAN. USE "D" AS DEFINED ON DETAIL RE: 7/S005.
- BEAM - RE: PLAN.
- GIRDER - RE: PLAN.
- REFERENCE: DETAIL SINGLE SHEAR PLATE CONNECTION.
- 7/8" Ø-A325 BOLTS.



2 SINGLE SHEAR PLATE CONNECTION DETAIL
 S-005 SCALE: NOT TO SCALE



CONNECTION STRENGTH TABLE (UNFACTORED) SEE 10/S005 FOR ADD'L NOTES

N (6) BOLTS	R1 (7) KIPS
2	13.6"
3	24.7
4	36.1
5	47.4
6	58.5
7	69.4
8	80.3
9	91.0
10	102.0

1 BEAM TO BEAM SPLICE CONNECTION DETAIL
 S-005 SCALE: NOT TO SCALE

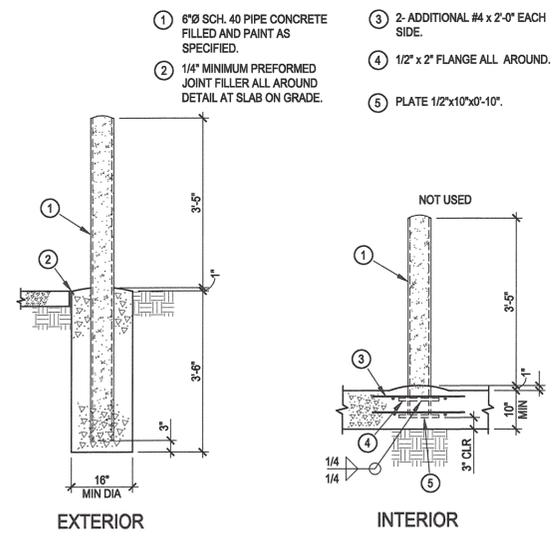
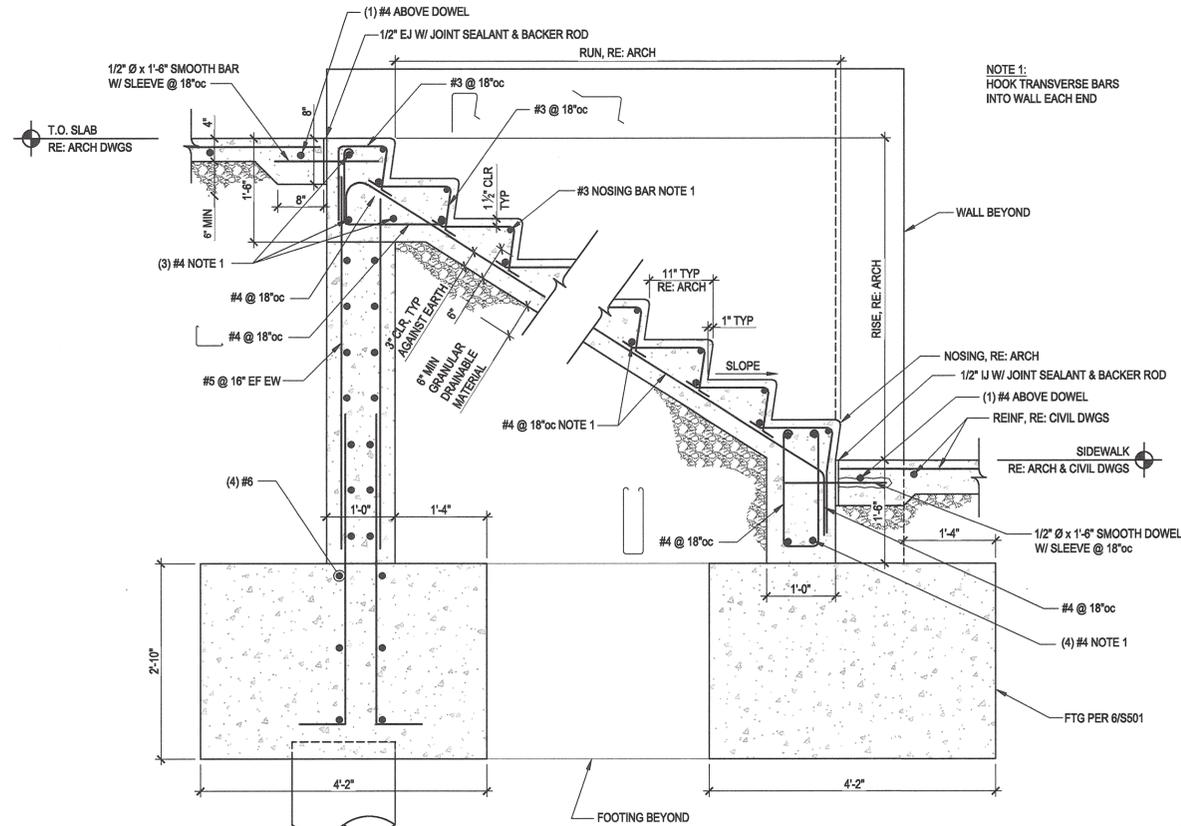
SFOBB TOLL OPERATIONS BLDG
BRIDGE NO. 33M5785
 STRUCTURAL TYPICAL DETAILS

SHEET S-005

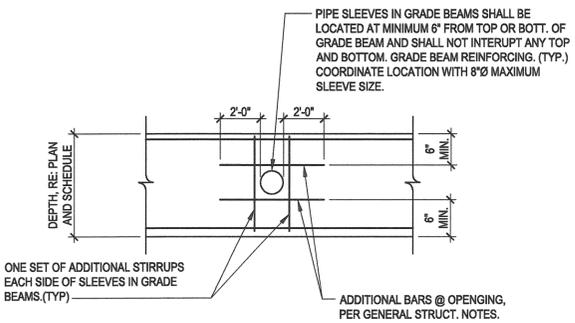
Drawing Name: S004-S008-Structural_Typical_Details.dwg; Layout: S-005 @ 11/24; PROJECTS\46748_SFOBB\Structural\DWG
 Last Saved By: J.Station - 10/19/09 08:21 am - Printed By: J.Station - 10/21/09 2:35 pm

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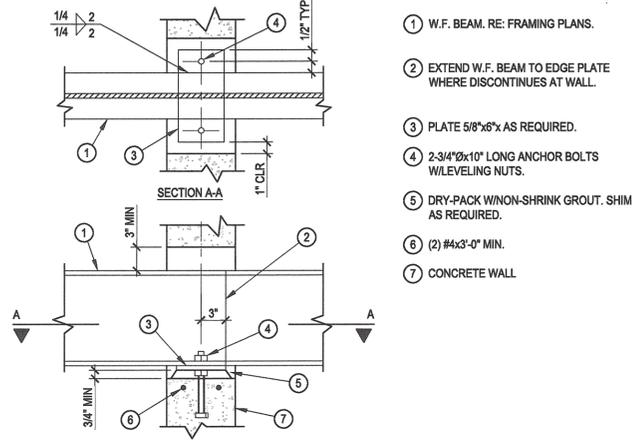


5 EXTERIOR PIPE BOLLARDS
S-007 SCALE: NOT TO SCALE

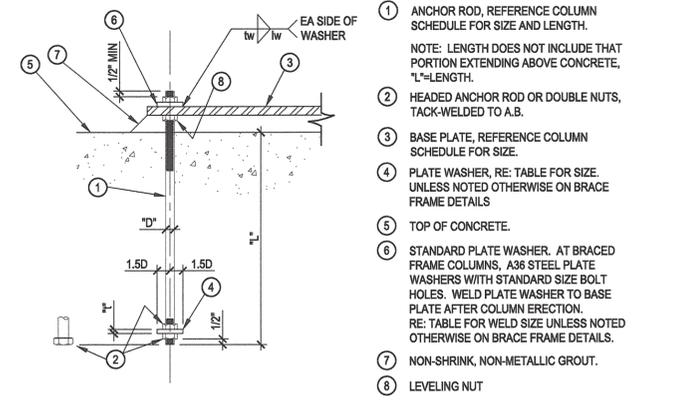


TYP. SLEEVES THRU GRADE BEAMS

4 TYP. CONCRETE DETAIL
S-007 SCALE: NOT TO SCALE



2 CONCRETE BEAM SEAT DETAIL
S-601 SCALE: NOT TO SCALE

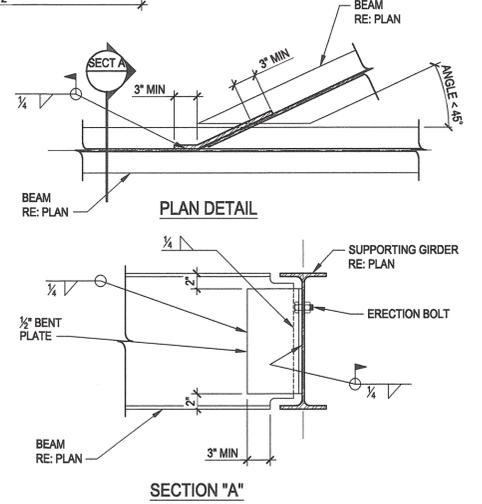


ANCHOR ROD TABLE

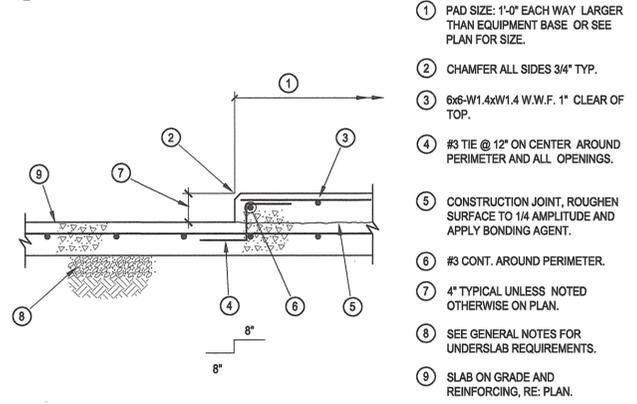
ANCHOR ROD DIAMETER (in)	"L" MIN. UNO	MIN GROUT THICKNESS, UNO (in)	MIN PLATE WASHER SIZE LxWxT	MIN FILLER WELD SIZE "w" (in)	MIN ANCHOR ROD PROJECTION (in)	LENGTH OF WELD "W" (in)
3/4	1'-2"	1 1/2	3"x3"x3/8"	1/4	6	2"
7/8	1'-4"	1 1/2	3"x3"x3/8"	1/4	6	2"
2 1/2	4'-0"	3	6"x6"x3/4"	1/2	10	5"

1 STANDARD ANCHOR ROD DETAIL
S-007 SCALE: NOT TO SCALE

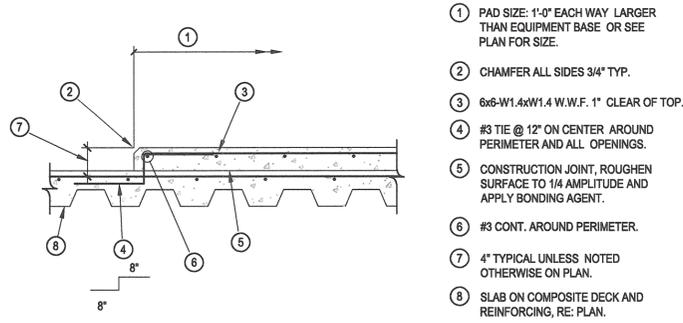
10 CAST-IN-PLACE STAIR ON GRADE
S-007 SCALE: NOT TO SCALE



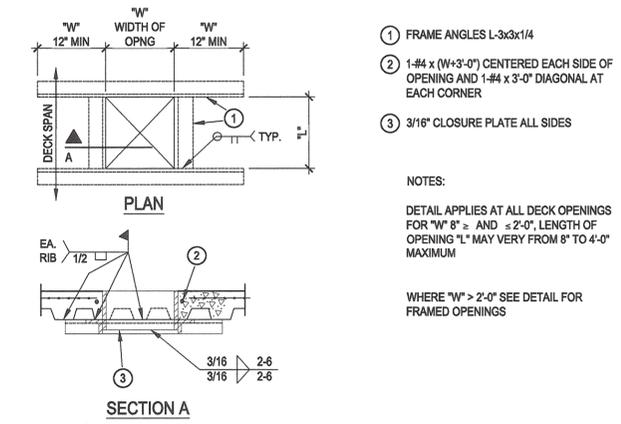
7 TYPICAL SKEWED BEAM CONNECTION FOR SMALL ANGLES
S-007 SCALE: NOT TO SCALE



6 SMALL EQUIP. PAD ON SLAB-ON GRADE
S-007 SCALE: NOT TO SCALE



9 EQUIP PAD ON COMPOSITE DECK
S-007 SCALE: NOT TO SCALE



8 UNFRAMED FLOOR OPENING
S-007 SCALE: NOT TO SCALE

3 FLOOR SLAB SLEEVE OPENING DETAIL
S-007 SCALE: NOT TO SCALE

REVISOR BY DATE

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CONSULTANT SUPERVISOR

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Drawing Name: S004-S008-Structural_Typical_Details.dwg; Layout: S-007 @ 11/24; PROJECT: S16748_SF08BBS(Struct)Dwg
Last Saved By: JStanton - 10/19/09 08:41am - Printed By: JStanton - 10/21/09 2:35pm

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04	Ala	80	2.0	155	316	

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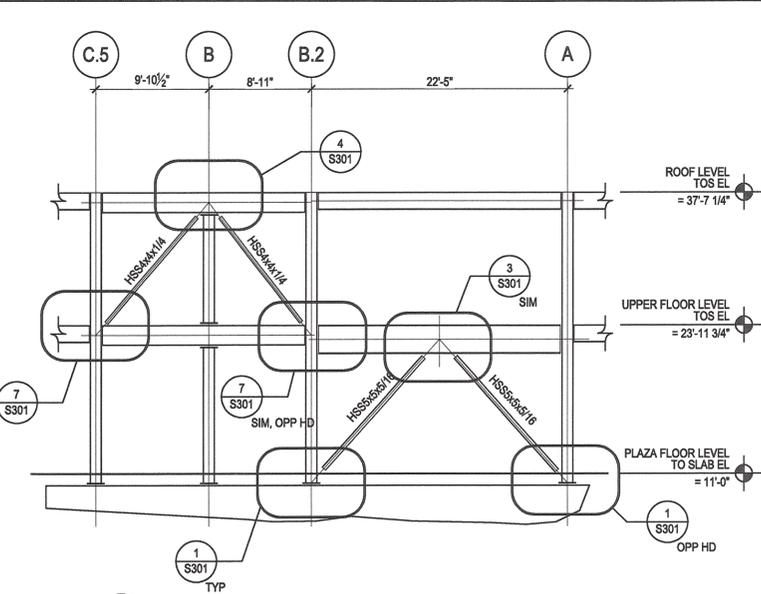


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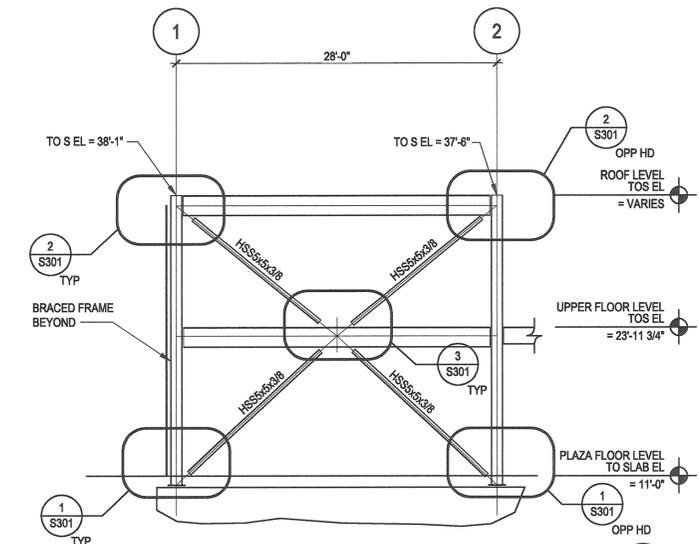
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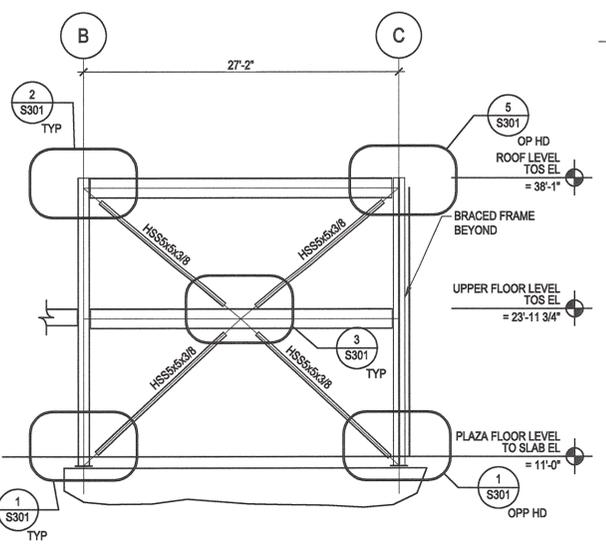
BAY AREA TOLL AUTHORITY



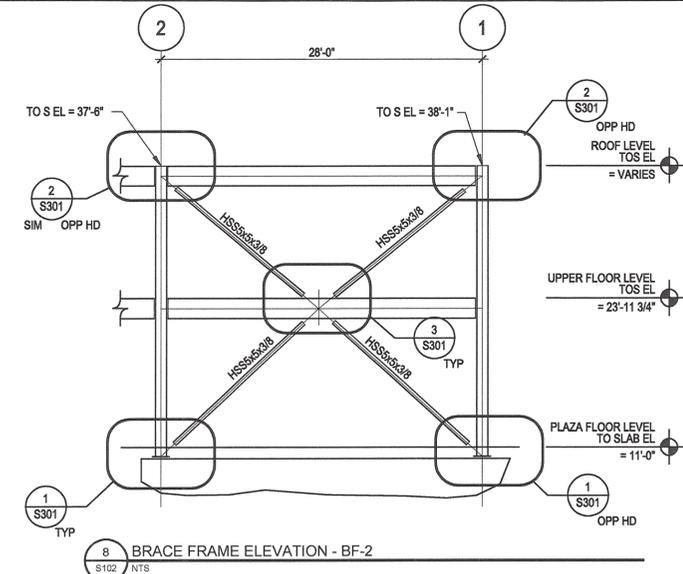
11 BRACE FRAME ELEVATION - BF-4
S102 NTS



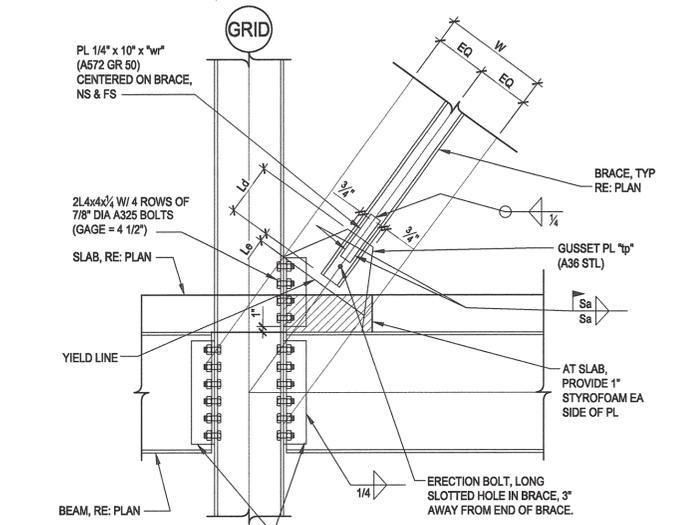
10 BRACE FRAME ELEVATION - BF-1
S102 NTS



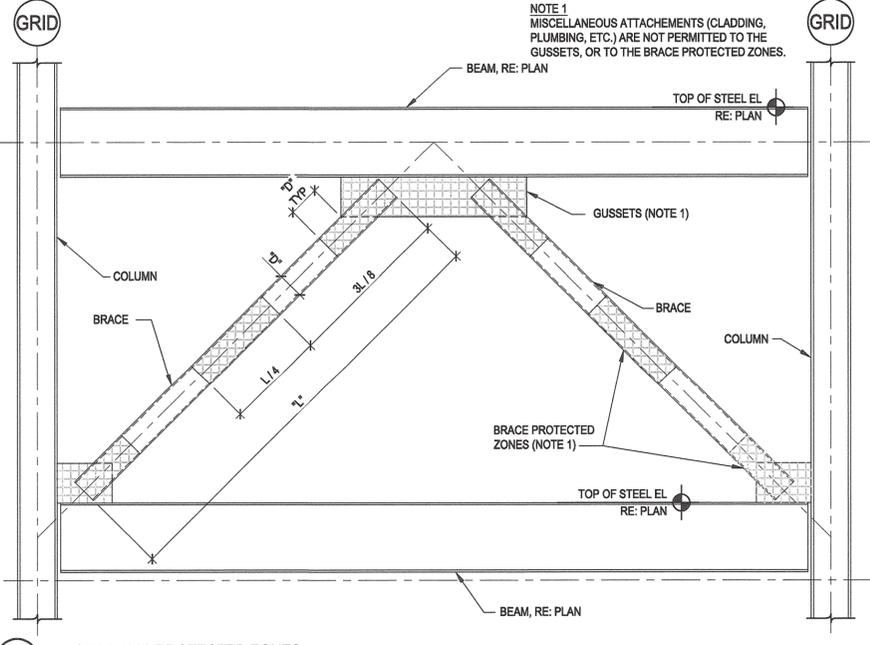
9 BRACE FRAME ELEVATION - BF-3
S102 NTS



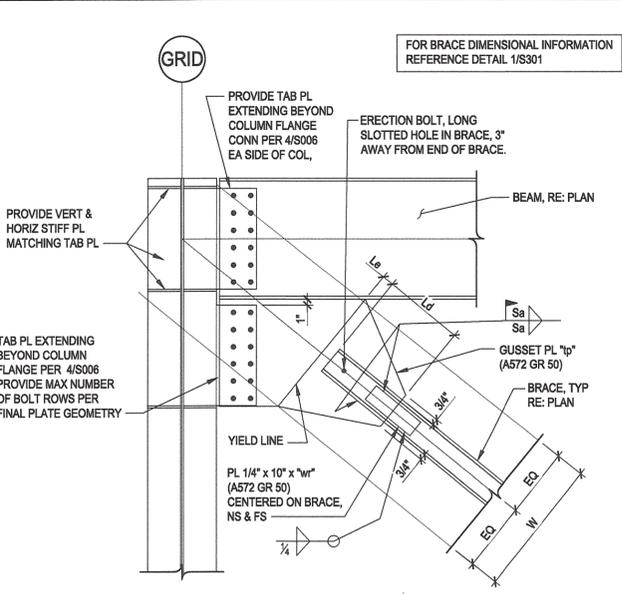
8 BRACE FRAME ELEVATION - BF-2
S102 NTS



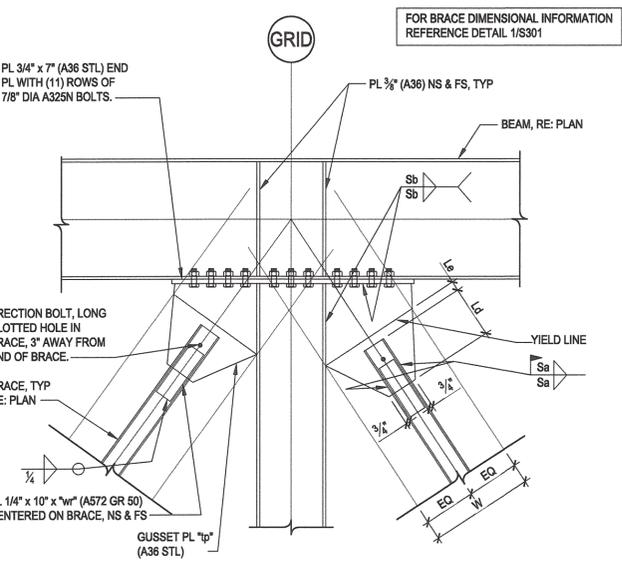
7 BRACE CONN DETAIL
S-301 SCALE: 3/4" = 1'-0"



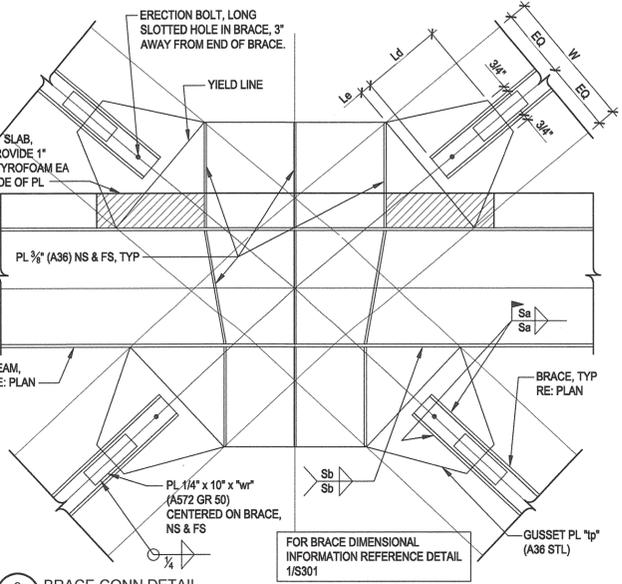
6 BRACE FRAME PROTECTED ZONES
S301 NTS



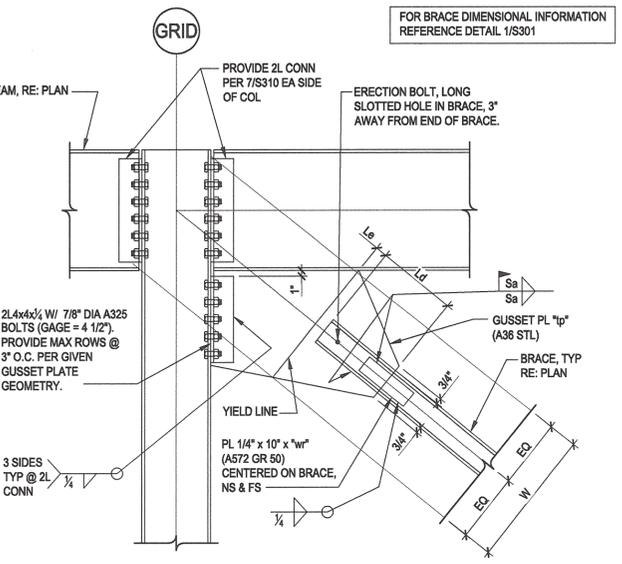
5 BRACE CONN DETAIL
S-301 SCALE: 3/4" = 1'-0"



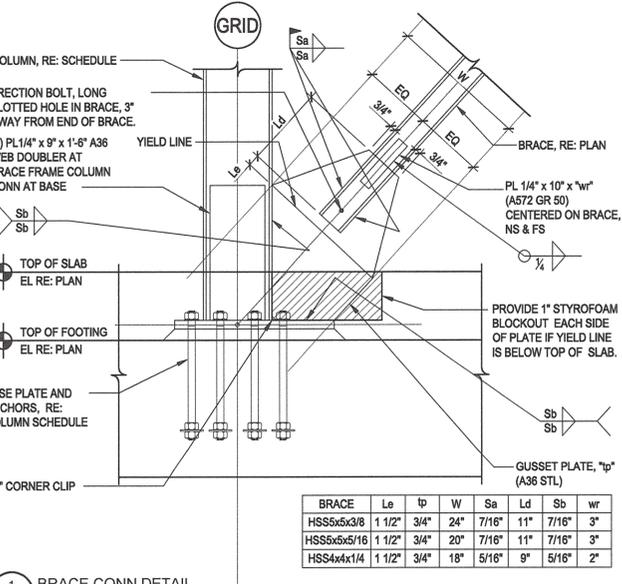
4 BRACE CONN DETAIL
S-301 SCALE: 3/4" = 1'-0"



3 BRACE CONN DETAIL
S-301 SCALE: 3/4" = 1'-0"



2 BRACE CONN DETAIL
S-301 SCALE: 3/4" = 1'-0"



1 BRACE CONN DETAIL
S-301 SCALE: 3/4" = 1'-0"

BRACE	Le	tp	W	Sa	Ld	Sb	nr
HSS5x5x3/8	1 1/2"	3/4"	24"	7/16"	11"	7/16"	3"
HSS5x5x1/8	1 1/2"	3/4"	20"	7/16"	11"	7/16"	3"
HSS4x4x1/4	1 1/2"	3/4"	18"	5/16"	9"	5/16"	2"

SFOBB TOLL OPERATIONS BLDG
BRIDGE NO. 33M5785
BRACE FRAME ELEVATIONS AND DETAILS SHEET S-301

Drawing Name: S401-schedules.dwg Layout: S-401 @ 1/2"=1'-0" PROJECT: SFOBB TOLL OPERATIONS BLDG BRIDGE NO. 33M5785
 Last Saved By: SStation - 10/19/09 11:40am - Printed By: SStation - 10/21/09 2:39pm

COLUMN NUMBERS	B-2, B-3, C-5-3	C1 C2 C3	C-5-5, C-2-6, D-8-2-6, D-8-3, D-8-5	A-1-3-5, A-1-4, A-1, A-2, A-3	A1.1, A1.2, A-4, B-1, B-2-4, C-5-4, C-2	A-1-4-8, A-4-8, B-2-4-8	C4 C5	B-4	A-2-2-9	C6 C7	C-1
TOP OF COLUMN EL.	-	-	-	-	-	-	-	-	-	-	-
COLUMN TOP PLATE	-	-	-	-	-	-	-	-	-	-	-
ROOF LEVEL TOP OS STEEL EL 35'-5 1/2"											
UPPER LEVEL TOP OF CONC EL 24'-6"											
PLAZA LEVEL TOP OF CONC EL 11'-0"	W12x40		W12x40	W12x40	W12x45	W12x40	HSS4x4x3/8	W12x40	PIPE 2 STD	HSS5x5x3/8	W12x45
LOWER LEVEL TOP OF SLAB EL 0'-0"		HSS4x4x3/8									
BOTTOM OF BASE PLATE EL.	-0'-10 1/2"	-0'-10 1/2"	10'-1 1/2"	10'-1 1/2"	10'-1 1/2"	-	-	10'-1 1/2"	10'-1 1/2"	-	10'-1 1/2"
BASE PLATE TYPE	1	1	1	1	4	-	-	4	II	-	4
ANCHOR RODS 1554 GR 55 (UNO)	(4) - 3/4" DIA. x 2'-10" EMBED & 10" PROJECTION	(4) - 3/4" DIA. x 2'-10" EMBED & 10" PROJECTION	(4) - 3/4" DIA. x 2'-10" EMBED & 10" PROJECTION	(4) - 3/4" DIA. x 2'-10" EMBED & 10" PROJECTION	(8) - 2 1/2" DIA. W/ 3'-6 1/2" EMBED & 10" PROJECTION	-	-	(8) - 2 1/2" DIA. W/ 3'-6 1/2" EMBED & 10" PROJECTION	(4) - 3/4" DIA. x 2'-10" EMBED & 10" PROJECTION	-	(8) - 2 1/2" DIA. W/ 3'-6 1/2" EMBED & 10" PROJECTION
BASE PLATE SIZE (TxLxW)	1'x16'x1'-4"	1'x10'x0'-10"	1'x16'x1'-4"	1'x16'x1'-4"	2'x16'x1'-4"	-	-	2'x16'x1'-4"	1'x10'x0'-10"	-	2'x16'x1'-4"
NOTES/REMARKS	-	-	-	-	RE: 4/S505 FOR BASE PLATE DTL 2/S505 FOR PEDESTAL DTL	-	-	RE: 7/S-005 FOR BASE PLATE DTL	RE: 4/S505 FOR BASE PLATE DTL 2/S505 FOR PEDESTAL DTL	④	RE: 1/S505 FOR BASE PLATE DTL 2/S504 FOR PEDESTAL DTL

- GENERAL NOTES FOR TUBE AND PIPE COLUMN BASE PLATES:**
- SEE COLUMN SCHEDULE FOR BASE PLATE SIZE, THICKNESS, AND TYPE. WHERE NO SIZE IS INDICATED, USE MINIMUM SIZE SHOWN.
 - PROVIDE NON-SHRINK GROUT UNDER BASE PLATES. THICKNESS SHALL BE 1 1/2" FOR BOLTS 1" DIA. & SMALLER, THICKNESS SHALL BE 2" FOR BOLTS 1 1/2" DIA.
 - ANCHOR BOLTS SHALL BE 3/4" DIAMETER x 1'-0" HEADED, MINIMUM, FURNISHED WITH LEVELING NUTS, (UNO).
 - MINIMUM BASE PLATE THICKNESS FOR TYPE I & TYPE II SHALL BE 3/4".
 - "T" = WALL THICKNESS OR 5/16" MAXIMUM.
 - "E" = EDGE DISTANCE SHALL BE 1 1/4" MINIMUM
 - "W" = BASE PLATE WIDTH.
 - "L" = BASE PLATE LENGTH.
 - OVERSIZED ANCHOR BOLT HOLES PER AISC PAGE 4-125.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	80	2.0	156	316

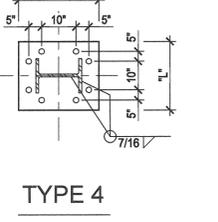
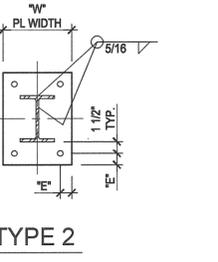
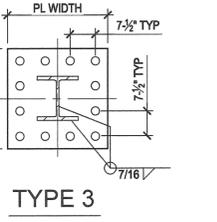
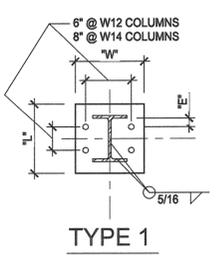
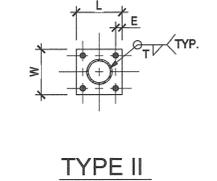
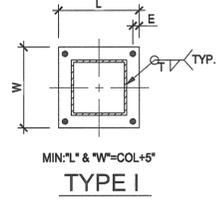
BRENT N. BONHAM 10/23/2009
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CALIFORNIA ARCHITECTS, P.C.
ONE BUNKER HILL BUILDING
601 WEST 5TH STREET, SUITE 1010
LOS ANGELES, CALIFORNIA 90071



③ TUBE & PIPE COLUMN BASE PLATE
S-401 NTS

- GENERAL NOTES FOR WIDE-FLANGE COLUMN BASE PLATES:**
- SEE COLUMN SCHEDULE THIS SHEET FOR BASE PLATE SIZE, THICKNESS AND TYPE.
 - ANCHOR ROD HOLES SHALL BE OVERSIZED NOT MORE THAN AISC PAGE 14-21.
 - EDGE DISTANCE "E" SHALL BE 1 1/2" FOR 7/8" DIA. ANCHOR BOLTS OR LESS AND 2" FOR 1" DIA. OR LARGER ANCHOR BOLTS.
 - PROVIDE NON-SHRINK GROUT UNDER BASE PLATES.

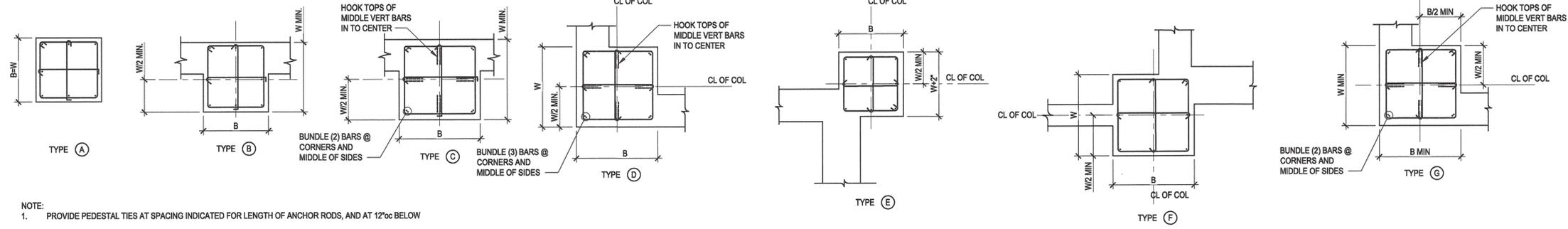
④ WIDE-FLANGE COLUMN BASE PLATE
S-401 NTS

- GENERAL NOTES:**
- ALL WIDE FLANGE COLUMNS AND ALL BASE PLATES AND CAP PLATES SHALL BE FABRICATED WITH A572 GR 50 MATERIAL.
 - REFERENCE FRAMING SECTIONS FOR COLUMN SPLICE DETAILS AT SUITES LEVEL.
 - REFERENCE DETAIL 1/S-004 FOR TYPICAL ANCHOR ROD DETAIL.
 - ALL CAP PLATES FOR WIDE FLANGE COLUMNS TO BE OUTSIDE DIMENSIONS OF COLUMNS +1". ALL CAP PL'S FOR HSS COLUMNS TO MATCH WIDTHS OF COLUMN. THESE CAP PLATE SIZES ARE TYPICAL UNLESS OTHERWISE NOTED IN STEEL DETAILS.

- COLUMN SCHEDULE NOTES:**
- REFERENCE 1/S-004 FOR GROUT REQUIREMENTS REFERENCE PLAN SHEETS AND S401 FOR TOP OF CONCRETE ELEVATIONS.
 - REFERENCE PLANS FOR TOP OF BEAM ELEVATIONS. COLUMN SHALL HAVE A TOP OF COLUMN ELEVATION THE SAME AS THE BEAM WITH THE HIGHEST ELEVATION FRAMING INTO THE COLUMN.
 - REFERENCE PLANS FOR TOP OF BEAM ELEVATIONS. COLUMN SHALL BE CALCULATED IN THE FOLLOWING WAY: TOP OF BEAM FRAMING INTO COLUMN - DEPTH OF BEAM.
 - VERTICAL SLIP CONNECTION AT TOP OF COLUMN PER DETAIL 6/S-603. CURB, PEDESTAL BASE PER DETAIL 9/S-505.

① STEEL COLUMN SCHEDULE
S-401 NTS

PEDESTAL MARK	P1	P2	P3	P4	P5	P6	P7	P8
TOP OF PEDESTAL ELEV.	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	-
PEDESTAL SIZE B x W	2'-4" x 2'-4"	2'-4" x 2'-4"	2'-4" x 2'-4"	2'-8" x 2'-8"	2'-8" x 2'-8"	2'-8" x 2'-8"	2'-4" x 2'-4"	-
PEDESTAL VERT. REINF.	(8) #9	(8) #9	(8) #9	(16) #7	(16) #7	(16) #7	(8) #9	-
PEDESTAL TYPE	B	E	G	C	D	F	A	-
PEDESTAL TIES NOTE 1	#4 @ 12"oc	#4 @ 12"oc	#4 @ 12"oc	#4 @ 4"oc	#4 @ 4"oc	#4 @ 4"oc	#4 @ 12"oc	-
FOOTING DOWELS	(8) #9	(8) #9	(8) #9	(8) #10	(8) #10	(8) #10	(8) #9	-



② CONCRETE PEDESTAL SCHEDULE
S-401 NTS

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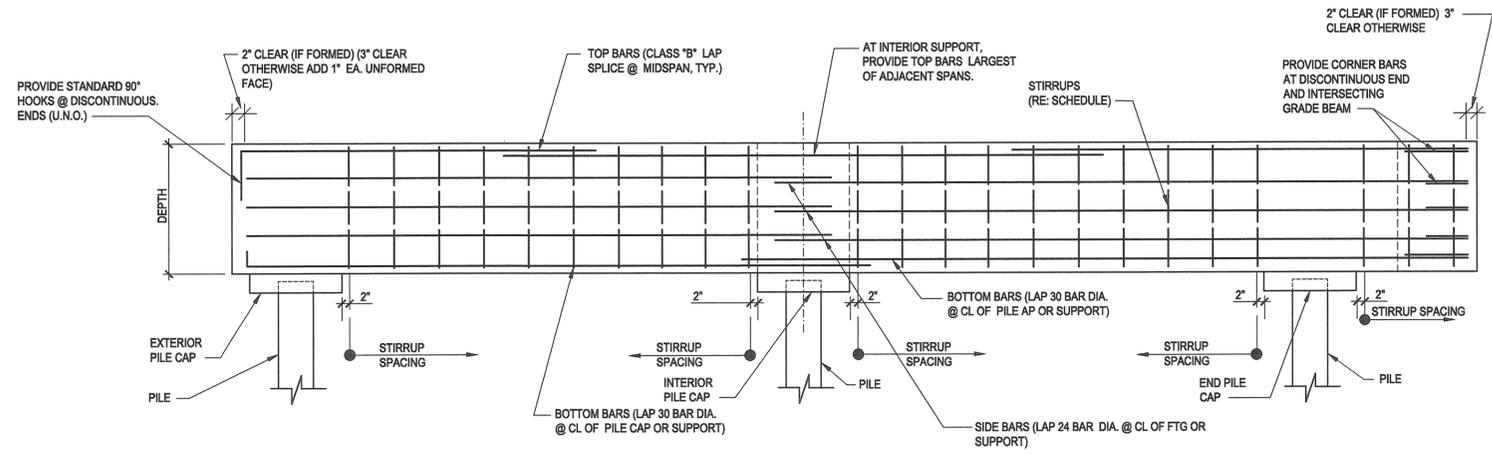
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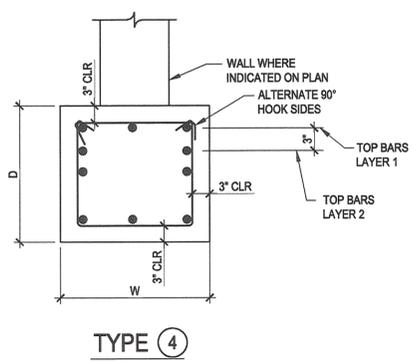
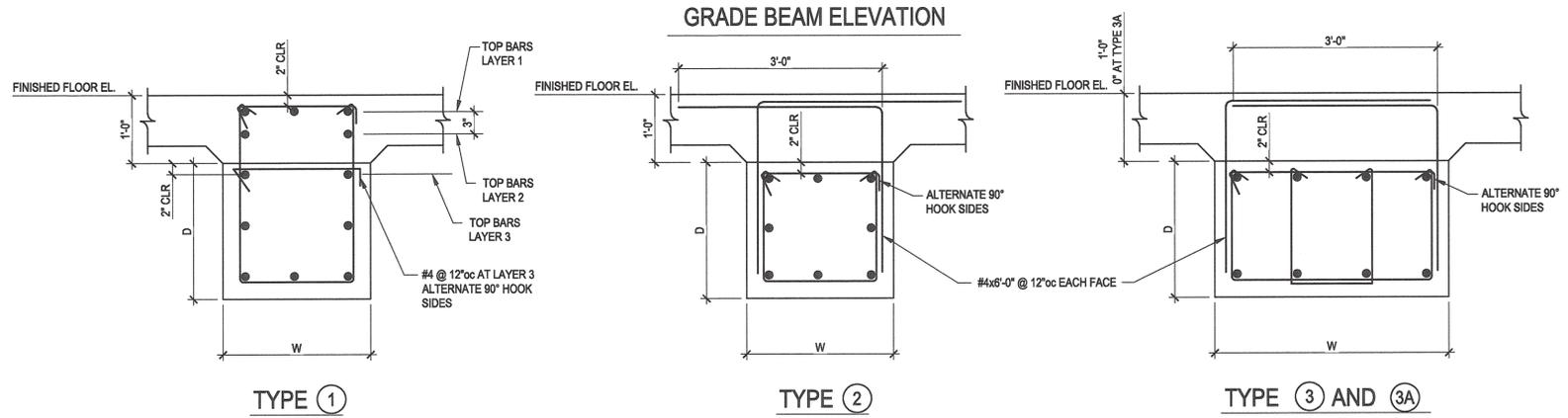
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 LOS ANGELES, CALIFORNIA 90071



DRAWING MARK	WIDTH (IN)	DEPTH (IN)	TYPE	TOP BARS (NOTE 7)		BOTTOM BARS		SIDE BARS (NOTE 4)		STIRRUPS		REMARKS
				No.	SIZE	No.	SIZE	No.	SIZE	SIZE	SPACING	
GB01	24	34	1	6	10	4	10	4	5	4	12	NOTE 3
GB02	24	34	1	4	9	4	9	4	5	4	12	NOTE 12
GB03	30	34	2	4	9	4	9	4	5	4	12	
GB04	24	34	2	3	9	3	9	4	5	4	12	
GB05	30	42	3	5	10	5	9	8	5	4	12	NOTE 11
GB06	24	34	2	3	9	3	9	4	5	4	12	
GB07	24	34	2	3	10	3	10	4	5	4	12	NOTE 5
GB08	VARIES	42	3	5	10	5	9	4	5	4	12	NOTE 10
GB09	24	34	2	4	10	4	8	4	5	4	8	
GB10	30	VARIES	2	4	7	4	7	4	5	4	12	NOTE 1
GB11	30	24	2	4	7	4	7	4	5	4	8	
GB12	18	24	2	3	7	3	7	4	5	4	12	
GB13	48	VARIES	3	8	11	8	8	4	5	4	12	NOTE 2
GB14	18	18	2	3	7	3	7			4	7	
GB20	40	42	3A	5	9	5	9	6	5	4	7	
GB21	48	48	3A	8	11	6	9	8	5	5	8	NOTE 6
GB22	24	30	2	3	10	3	9	4	5	4	12	
GB23	18	30	4	2	9	2	9			4	9	
GB24	24	30	2	3	9	3	9			4	12	
GB25	30	36	4	6	9	4	9	4	5	4	12	NOTE 8
GB26	30	36	4	6	9	4	9	4	5	4	12	NOTE 8
GB27	24	36	4	3	9	3	9	4	5	4	12	
GB28	30	36	4	4	9	4	9	4	5	4	12	
GB29	72	36	4	8	9	8	9					NOTE 9
GB30	57	36	4	6	9	6	9					NOTE 9
GB31	30	36	4	3	9	3	9	4	5	4	12	
GB32	24	30	4	3	8	3	8			4	12	
GB33	24	30	4	3	8	3	8			12	12	



- NOTES:
- SEE DETAIL 2/S503. TOP OF GRADE BEAM = TOP OF RAMP - 3". BOTTOM OF GRADE BEAM GB10 SHALL MATCH BOTTOM OF GB14.
 - SEE DETAIL 3/S503.
 - LOCATE (2) TOP BARS AT LAYER 2. PROVIDE ADDITIONAL (3) #9 AT LAYER 3.
 - HALF EACH SIDE, EVENLY SPACED.
 - STIRRUPS ON GRID "C": AT 4'-0" WEST OF GRID "2.6" TO GRID "2.6", PROVIDE STIRRUPS #4 AT 8"oc.
 - LOCATE (4) TOP BARS AT LAYER 2.
 - TOP BARS SHALL BE AT LAYER 1 UNLESS NOTED OTHERWISE.
 - LOCATE (2) TOP BARS AT LAYER 2.
 - PROVIDE #6 AT 12" WITH 90° STANDARD HOOK TRANSVERSE BARS TOP AND BOTTOM.
 - WIDTH VARIES 2'-3" TO 3'-6" MAXIMUM. SEE DETAIL X/S-XXX.
 - FROM INTERSECTION OF GB5 AND GB11 TO PILECAP AT GRID "C", PROVIDE STIRRUPS AT 12"oc.
 - PROVIDE ADDITIONAL (2) #9 AT LAYER 3.



1 CONCRETE GRADE BEAM SCHEDULE AND DETAILS
 S-402 NTS

SFOBB TOLL OPERATIONS BLDG
BRIDGE NO. 33M5785
GRADE BEAM SCHEDULE AND DETAILS

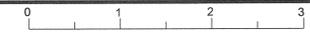
SHEET S-402

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 CONSULTANT FUNCTIONAL SUPERVISOR
 CALCULATED/DESIGNED BY
 CHECKED BY
 REVISED BY
 DATE REVISED

BORDER LAST REVISED 10/15/2009

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	80	2.0	160	316

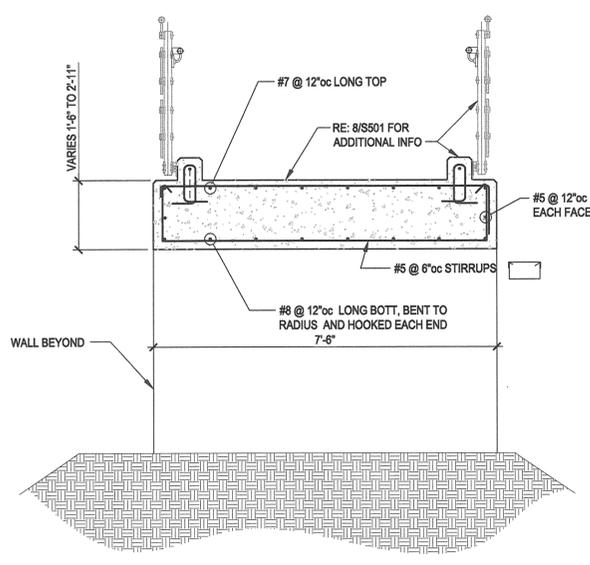
BRENT N. BONHAM 10/23/2009
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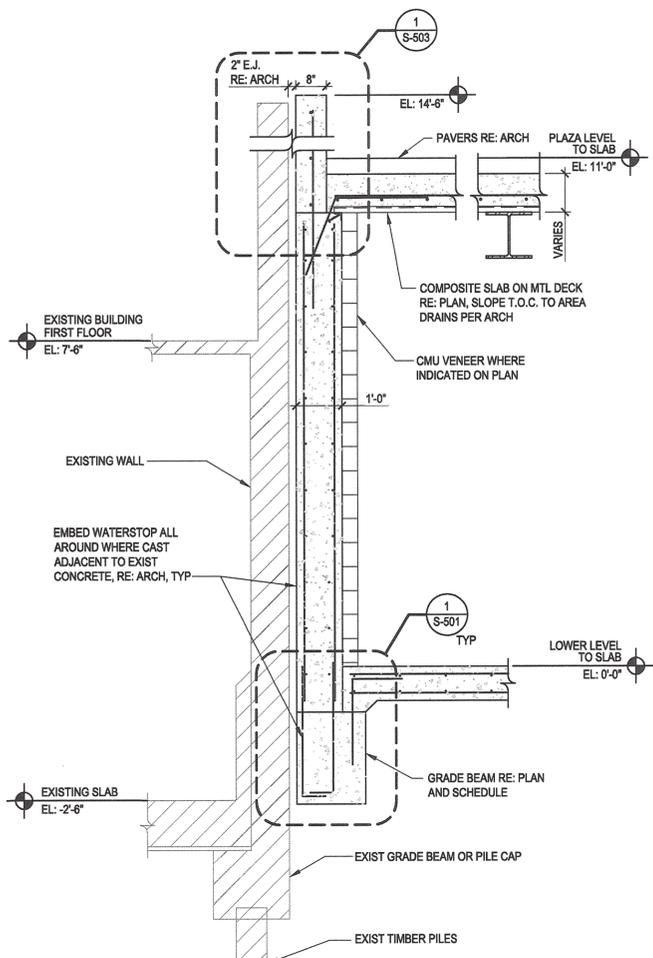
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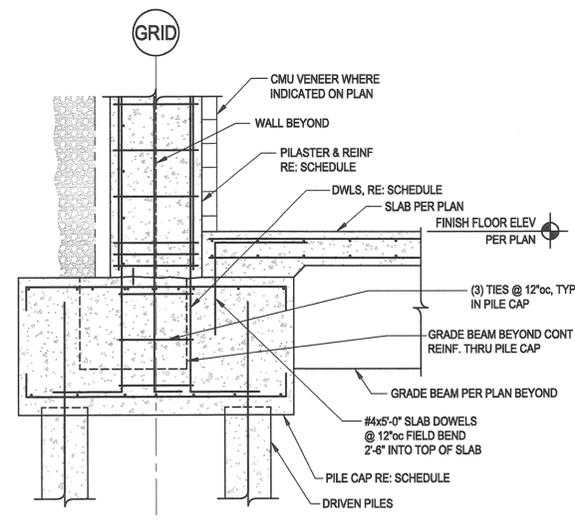
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LOS ANGELES, CALIFORNIA 90071



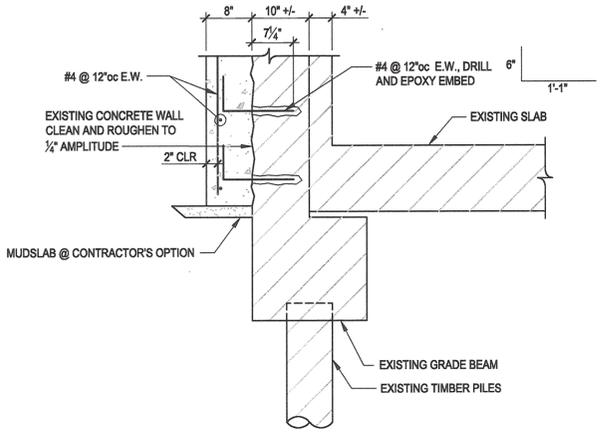
9 WALL SECTION AT RAMP AT OUTER PASS
S-101B SCALE: 1/2" = 1'-0"



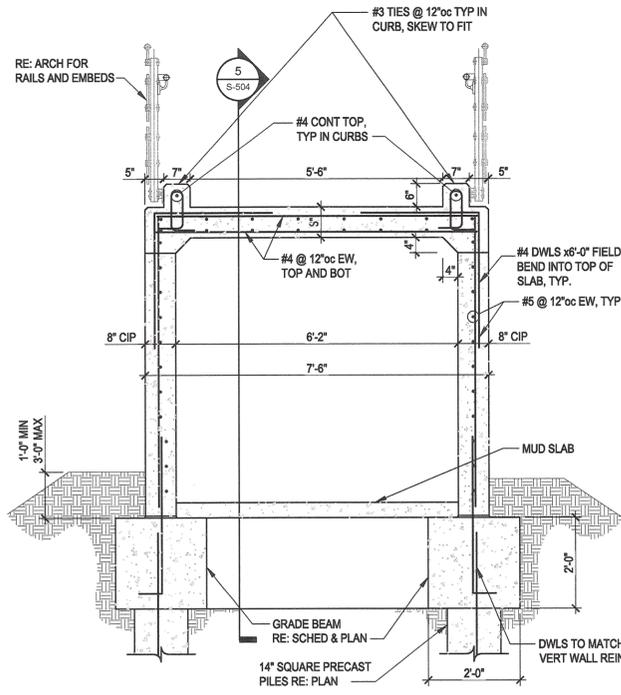
5 PERIMETER LOWER LEVEL PILE CAP
S-101A SCALE: 1/2" = 1'-0"



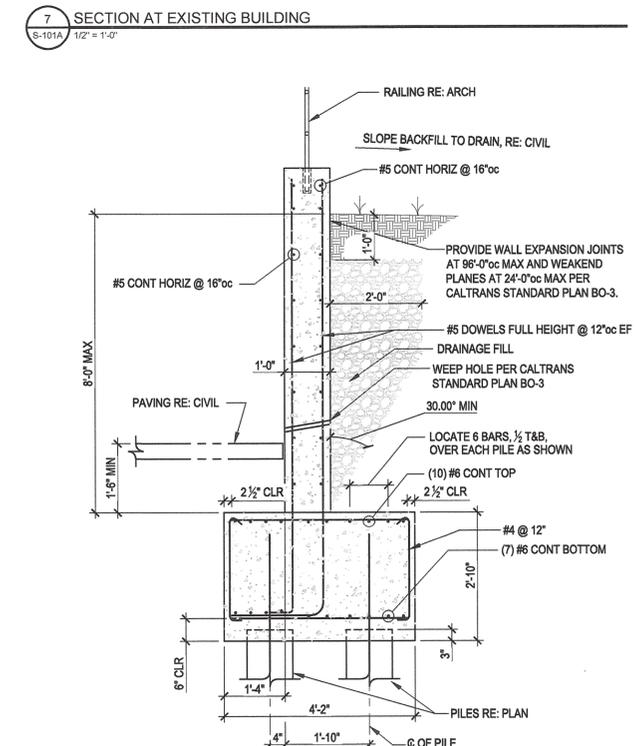
4 CANOPY COLUMN AT CURB
S-102 SCALE: 1 1/2" = 1'-0"



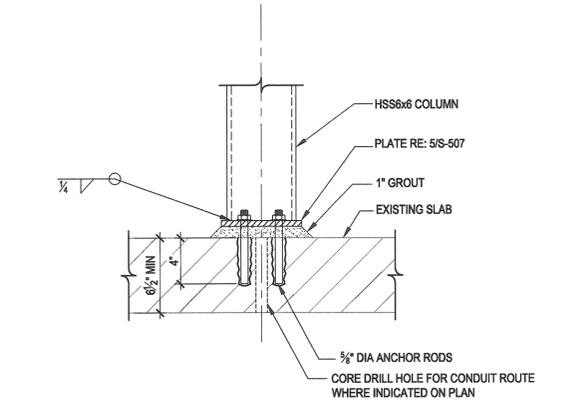
2 TYPICAL PILE DETAIL AT EXISTING WALL
S-101A SCALE: 3/4" = 1'-0"



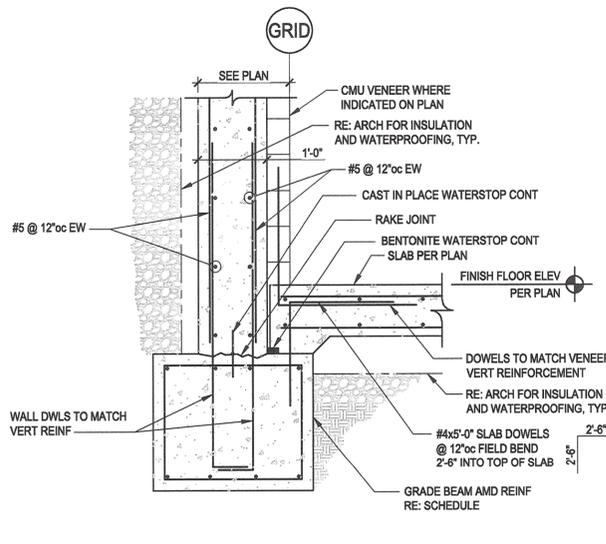
8 WALL SECTION AT RAMP
S-101B SCALE: 1/2" = 1'-0"



7 SECTION AT EXISTING BUILDING
S-101A SCALE: 1/2" = 1'-0"



3 CANOPY COLUMN AT CURB
S-102 SCALE: 1 1/2" = 1'-0"



1 TYPICAL PERIMETER LOWER LEVEL DETAIL
S-101 SCALE: 3/4" = 1'-0"

8 WALL SECTION AT RAMP
S-101B SCALE: 1/2" = 1'-0"

7 SECTION AT EXISTING BUILDING
S-101A SCALE: 1/2" = 1'-0"

3 CANOPY COLUMN AT CURB
S-102 SCALE: 1 1/2" = 1'-0"

1 TYPICAL PERIMETER LOWER LEVEL DETAIL
S-101 SCALE: 3/4" = 1'-0"

**SFOBB TOLL OPERATIONS BLDG
BRIDGE NO. 33M5785
FOUNDATION SECTIONS
AND DETAILS**

SHEET
S-501

CU 0000 EA 04-002974

Drawing Name: SFOBB-Structural-Foundation-Details.dwg Layout: S-501 @ 11/22/09 PROJECT: SFOBB-Structural-Dwg
Last Saved By: J.Slater - 10/13/09 08:58am - Printed By: J.Slater - 10/21/09 2:37pm

BORDER LAST REVISED 10/15/2009

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	80	2.0	162	316

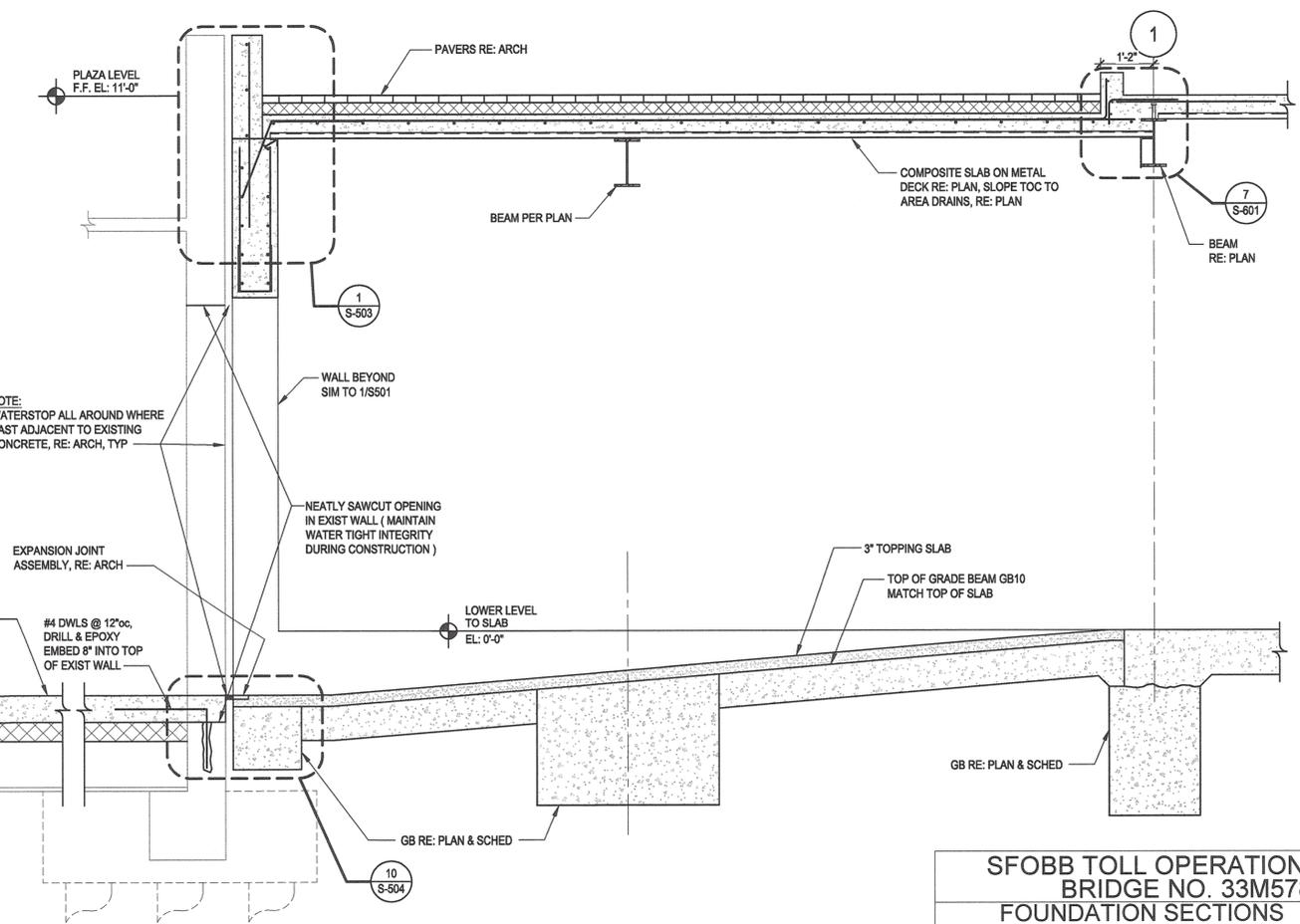
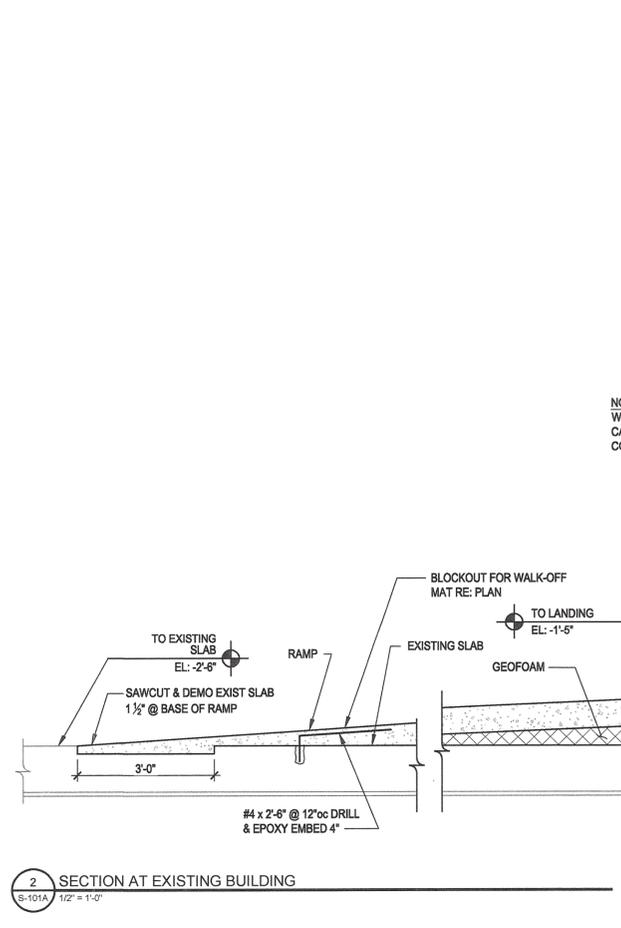
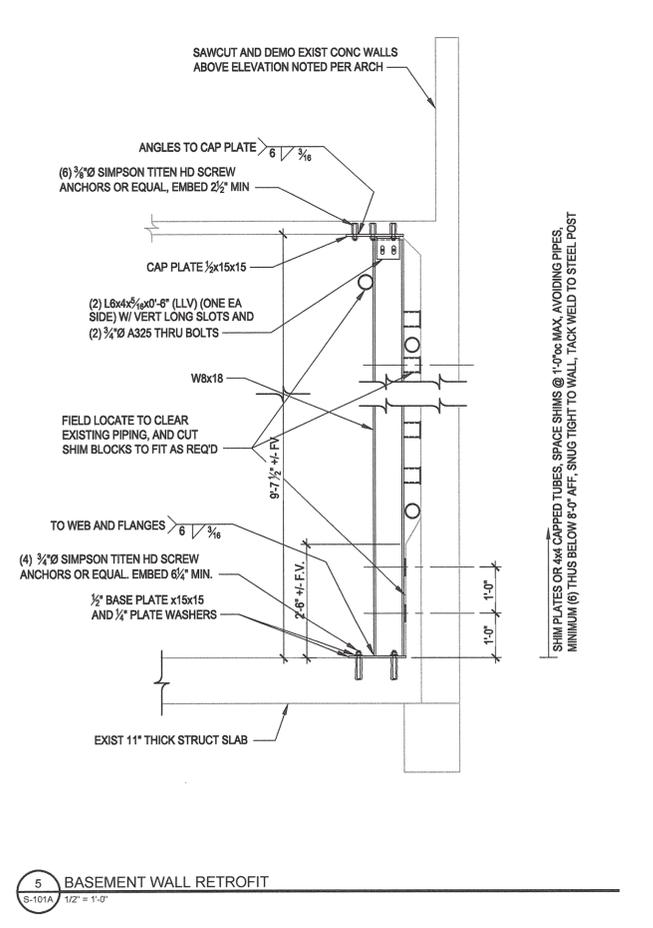
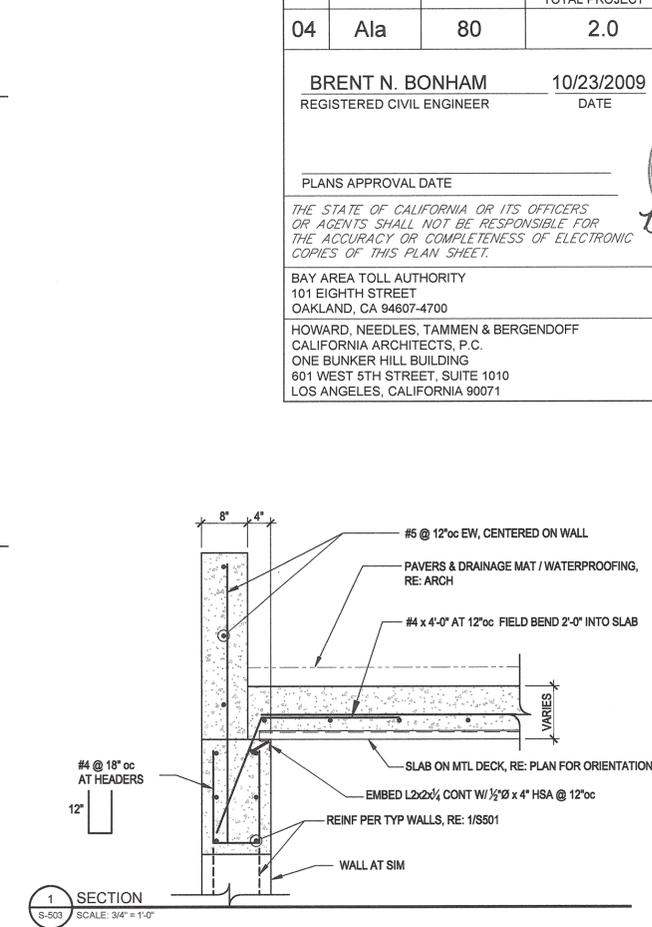
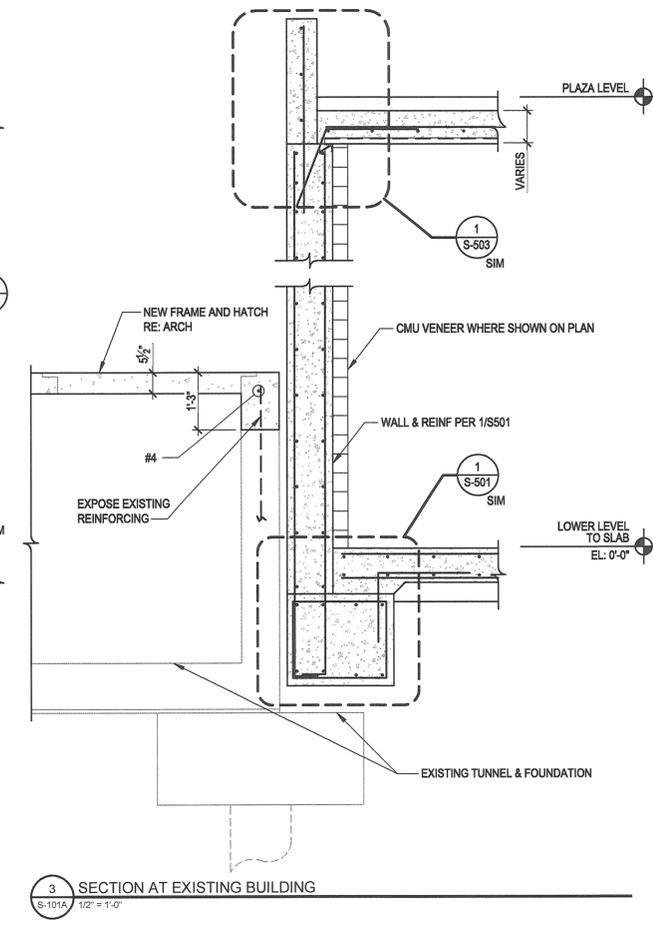
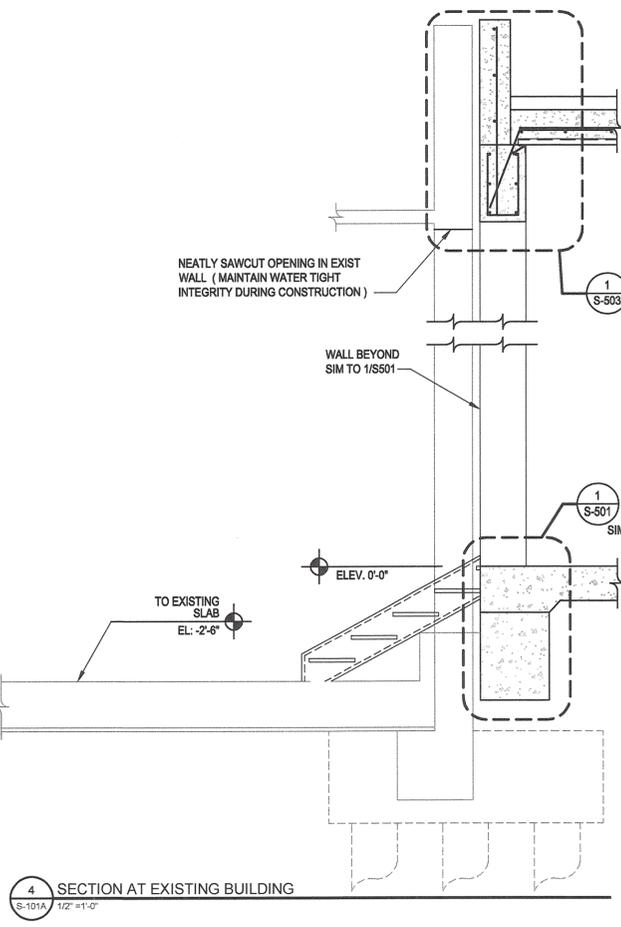
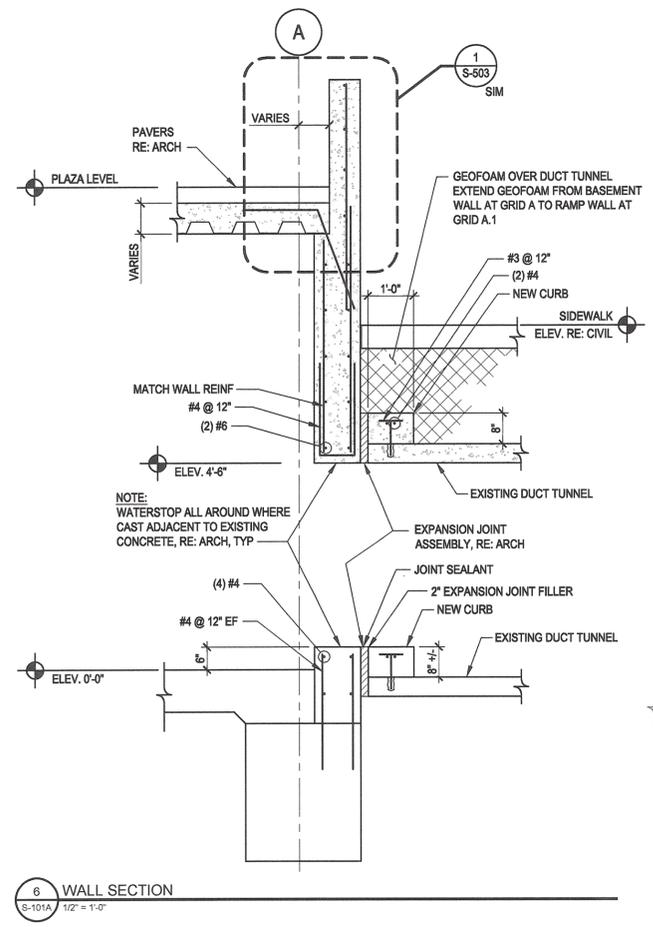
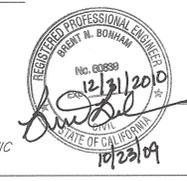
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 LOS ANGELES, CALIFORNIA 90071



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SFOBB TOLL OPERATIONS BLDG
BRIDGE NO. 33M5785
FOUNDATION SECTIONS
AND DETAILS

SHEET S-503



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04	Ala	80	2.0	163	316

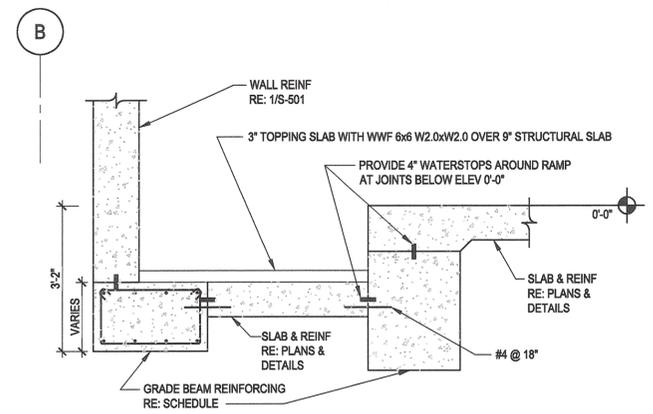
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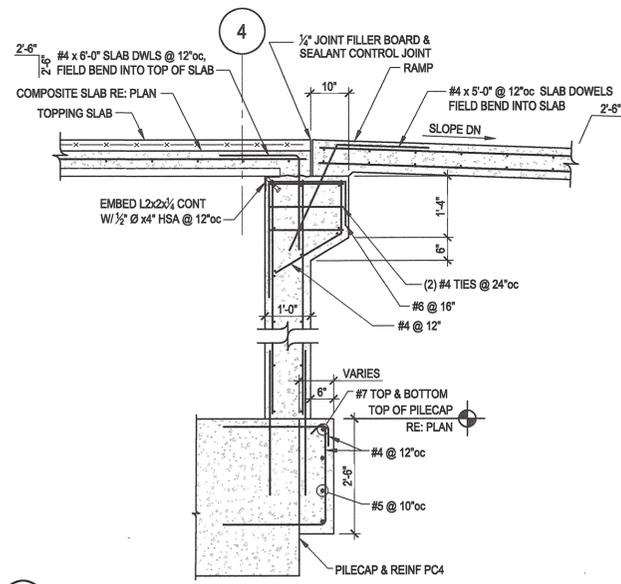
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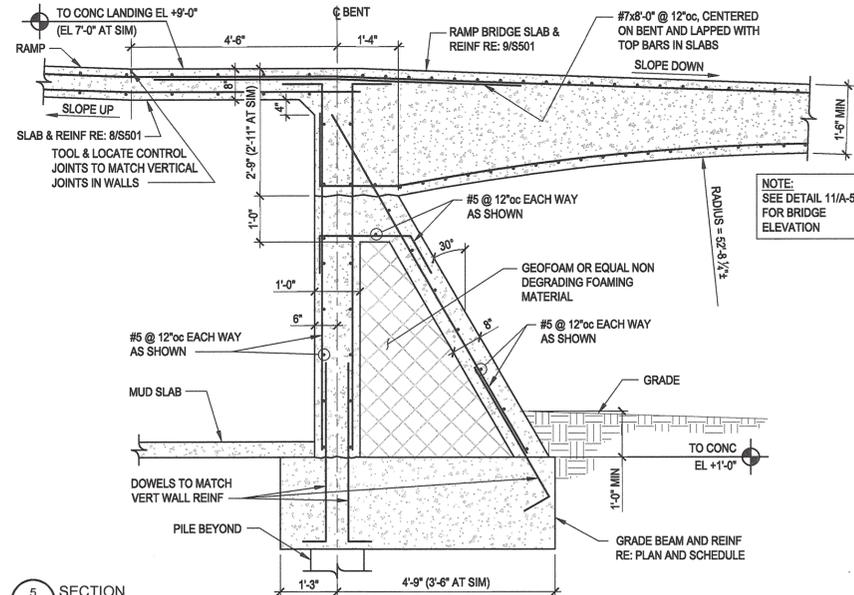
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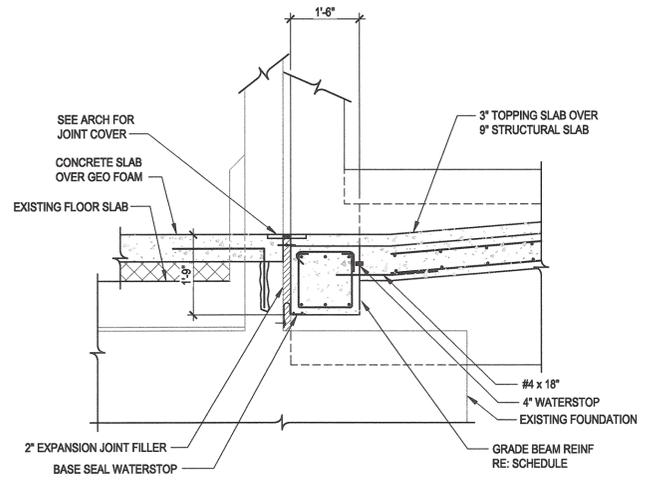
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 S-101A 1/2" = 1'-0"



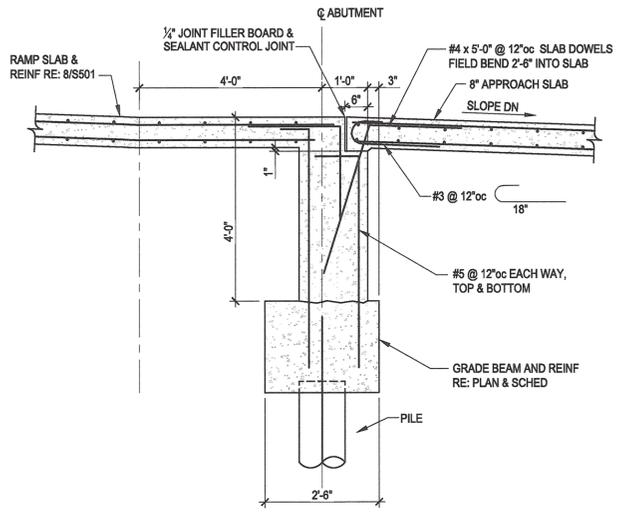
8 PEDESTRIAN RAMP SUPPORT AT BUILDING
 S-101B 1/2" = 1'-0"



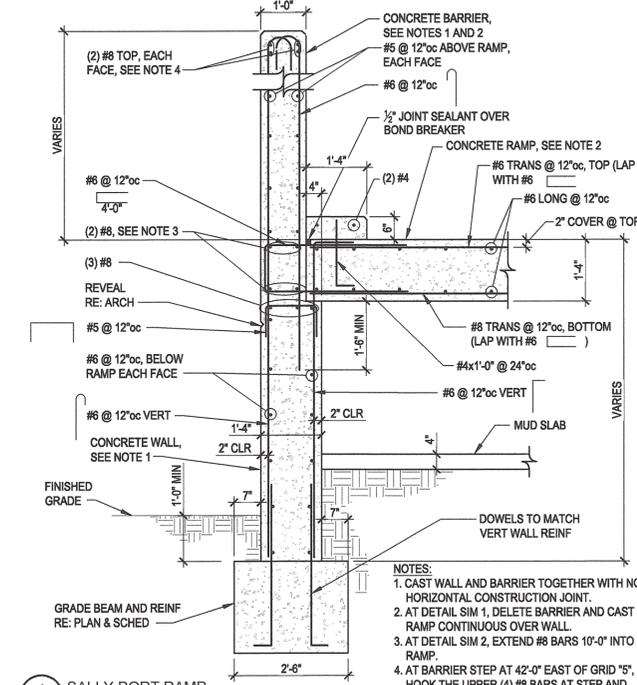
5 SECTION
 S-101B 1/2" = 1'-0"



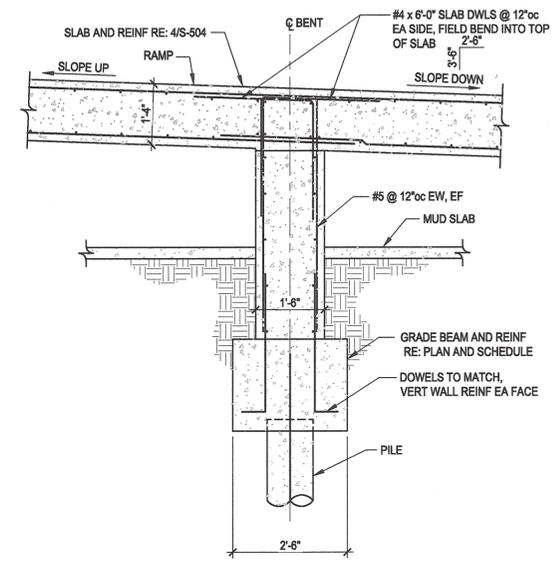
10 BASEMENT RAMP JOINT
 S-503 1/2" = 1'-0"



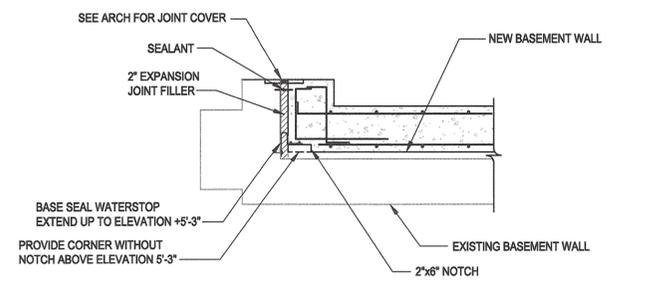
7 PEDESTRIAN RAMP ABUTMENT
 S-101B 1/2" = 1'-0"



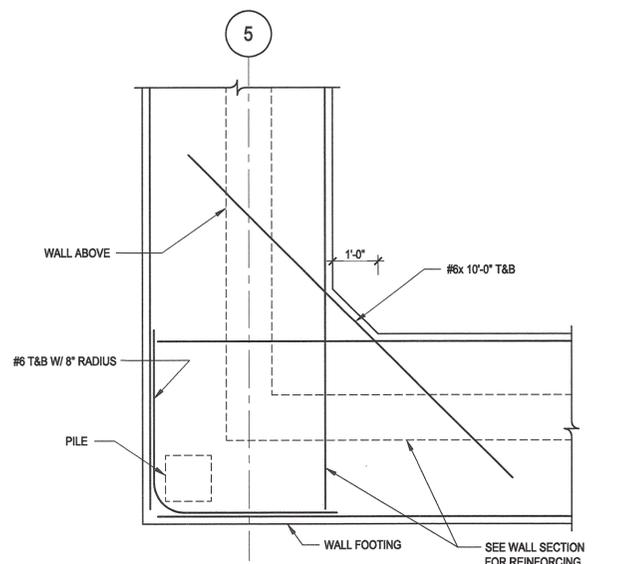
4 SALLY PORT RAMP
 S-101B 1/2" = 1'-0"



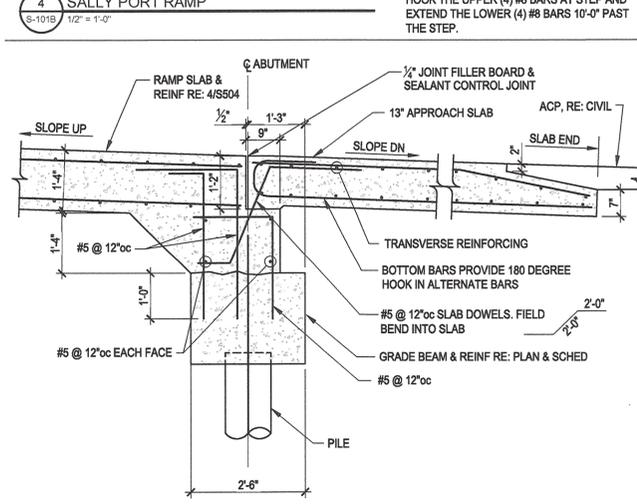
2 VEHICULAR RAMP BENT
 S-101B 1/2" = 1'-0"



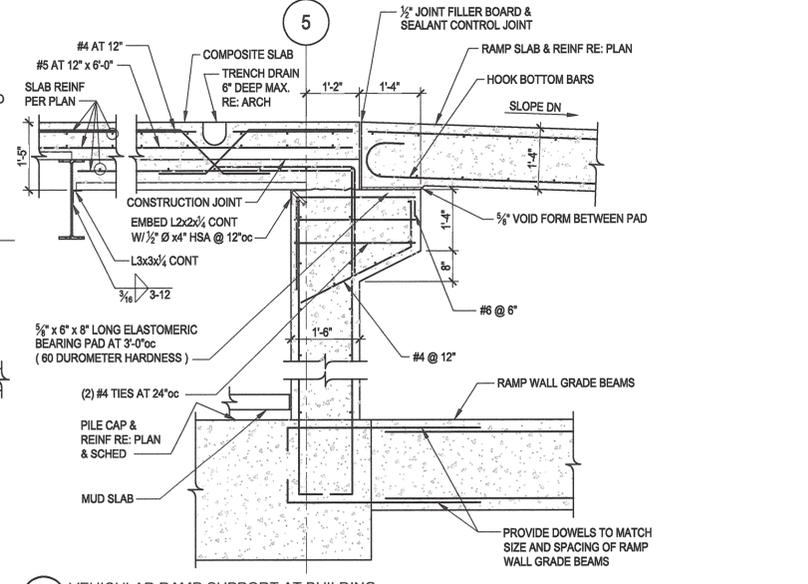
9 JOINT DETAIL
 S-101A 1/2" = 1'-0"



6 RETAINING WALL FOOTING CORNER
 S-101A 1/2" = 1'-0"



3 VEHICULAR RAMP ABUTMENT
 S-101B 1/2" = 1'-0"



1 VEHICULAR RAMP SUPPORT AT BUILDING
 S-101B 1/2" = 1'-0"

SFOBB TOLL OPERATIONS BLDG
BRIDGE NO. 33M5785
FOUNDATION SECTIONS
AND DETAILS

SHEET S-504

Drawing Name: S504_structural_foundation_details.dwg, Layout: S-504, T:\224_PROJECTS\46748_SFOBB\Struct\DWG
 Last Saved By: jshannon - 10/19/09 11:04am - Printed By: jshannon - 10/21/09 2:37pm

REVISOR BY DATE

CALCULATED BY CHECKED BY

CONSULTANT SUPERVISOR

BAY AREA TOLL AUTHORITY

BORDER LAST REVISED 10/15/2009

RELATIVE BORDER SCALE IS IN INCHES

0 1 2 3

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 DGN FILE => \$REQUEST

CU 0000

EA 04-002974

ISSUED FOR BID 3/10/10

DATE PLOTTED => \$DATE
 TIME PLOTTED => \$TIME

Dist	COUNTY	ROUTE	POST MILES	TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	80		2.0	167	316

BRENT N. BONHAM
REGISTERED CIVIL ENGINEER

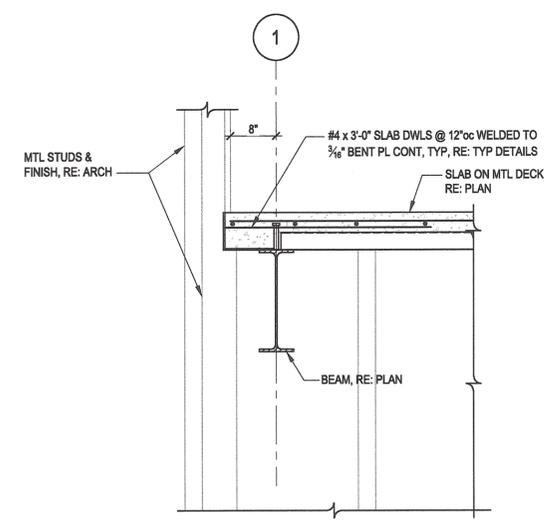
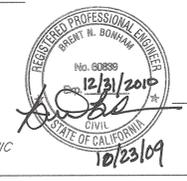
10/23/2009
DATE

PLANS APPROVAL DATE

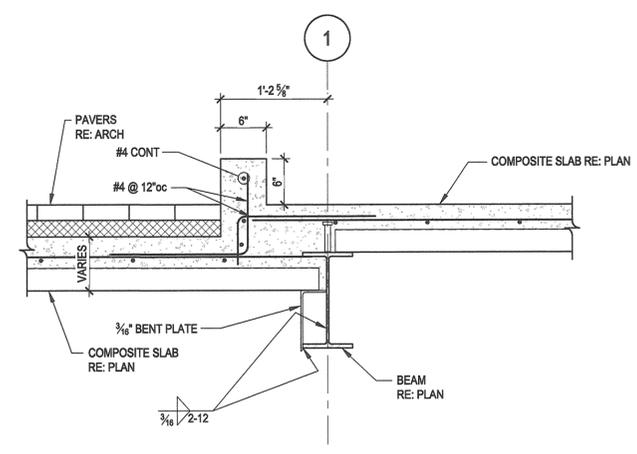
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BAY AREA TOLL AUTHORITY
101 EIGHTH STREET
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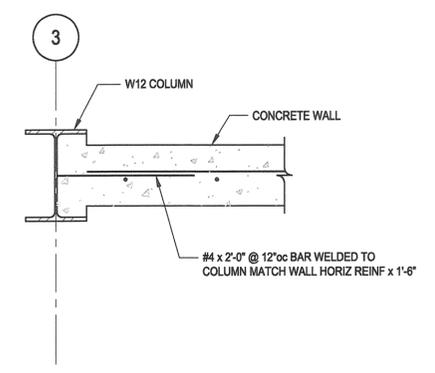
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CALIFORNIA ARCHITECTS, P.C.
ONE BUNKER HILL BUILDING
601 WEST 5TH STREET, SUITE 1010
LOS ANGELES, CALIFORNIA 90071



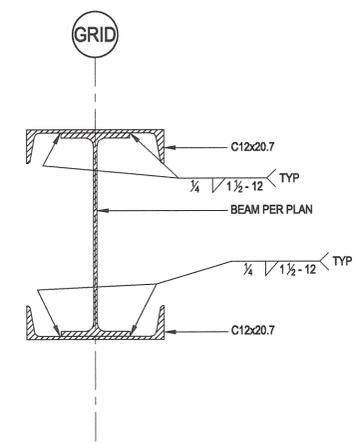
10 FRAMING SECTION
S-103 SCALE: 3/4" = 1'-0"



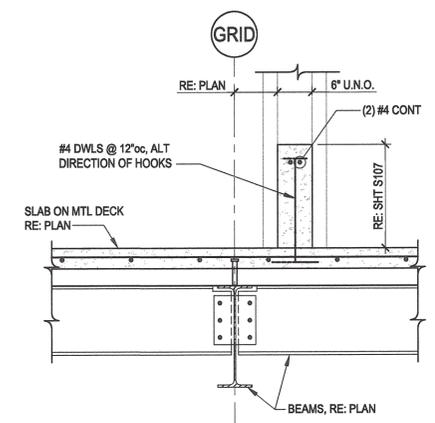
7 DETAIL SLAB TRANSITION
S-102 SCALE: 1" = 1'-0"



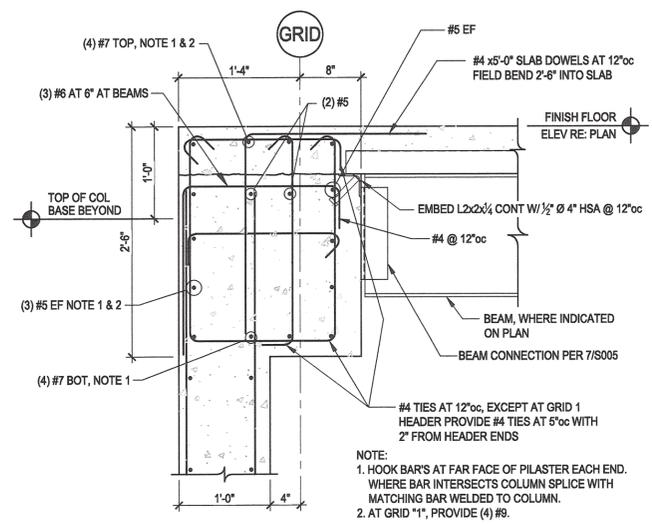
5 WALL END
S-101A SCALE: 1" = 1'-0"



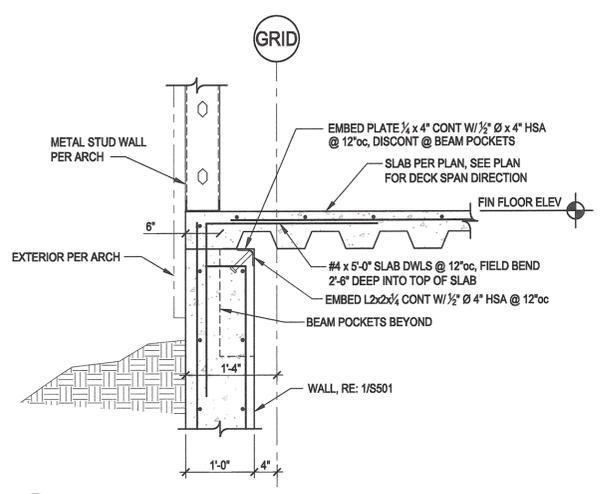
9 SECTION AT BEAM
S-103 SCALE: 1 1/2" = 1'-0"



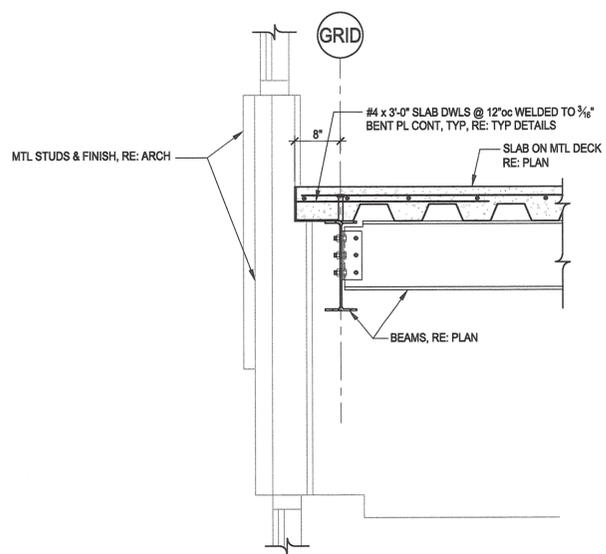
6 FRAMING SECTION
S-103 SCALE: 3/4" = 1'-0"



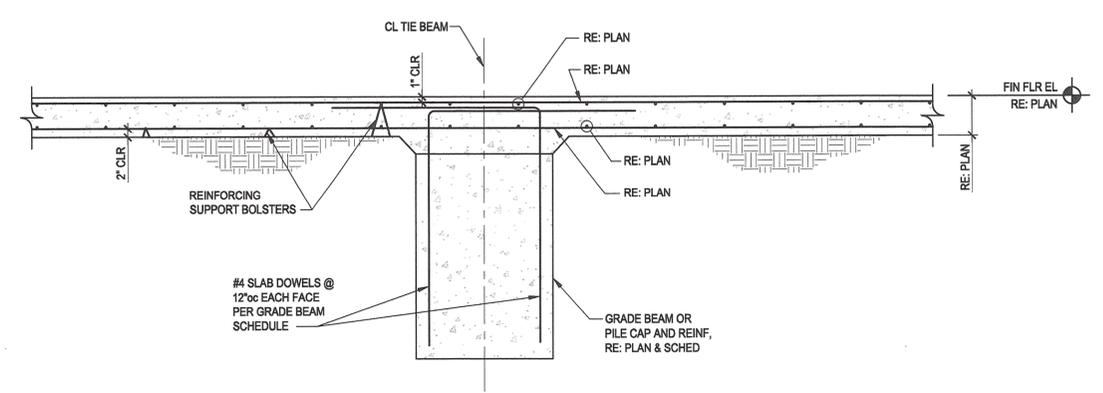
4 FRAMING BEAM
S-102 SCALE: 1" = 1'-0"



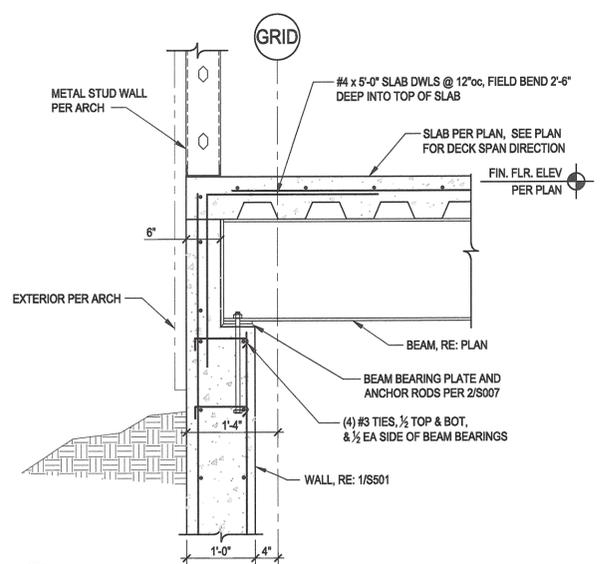
2 FRAMING SECTION
S-102 SCALE: 3/4" = 1'-0"



8 FRAMING SECTION
S-103 SCALE: 3/4" = 1'-0"



3 TYPICAL SLAB REINFORCING DETAIL
S-101A SCALE: 3/4" = 1'-0"



1 FRAMING SECTION
S-102 SCALE: 3/4" = 1'-0"

SFOBB TOLL OPERATIONS BLDG
BRIDGE NO. 33M5785
FLOOR FRAMING SECTIONS
AND DETAILS

SHEET S-601

Drawing Name: SFOBB-Structural-Shop-Framing-Details.dwg; Layout: S-601 @ 10/23/09 11:22AM; Project: SFOBB-Structural-Shop-Framing-Details.dwg; Station: 102109.237pm; User: S-601; Date: 10/23/09 11:22AM; Printed By: S-601

BORDER LAST REVISED 10/15/2009

RELATIVE BORDER SCALE IS IN INCHES

USERNAME => \$USER
DGN FILE => \$REQUEST

CU 0000 EA 04-002974

ISSUED FOR BID 3/10/10

DATE PLOTTED => \$DATE
TIME PLOTTED => \$TIME
LAST REVISION: 10/19/09

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	80	2.0	169	316

BRENT N. BONHAM
REGISTERED CIVIL ENGINEER

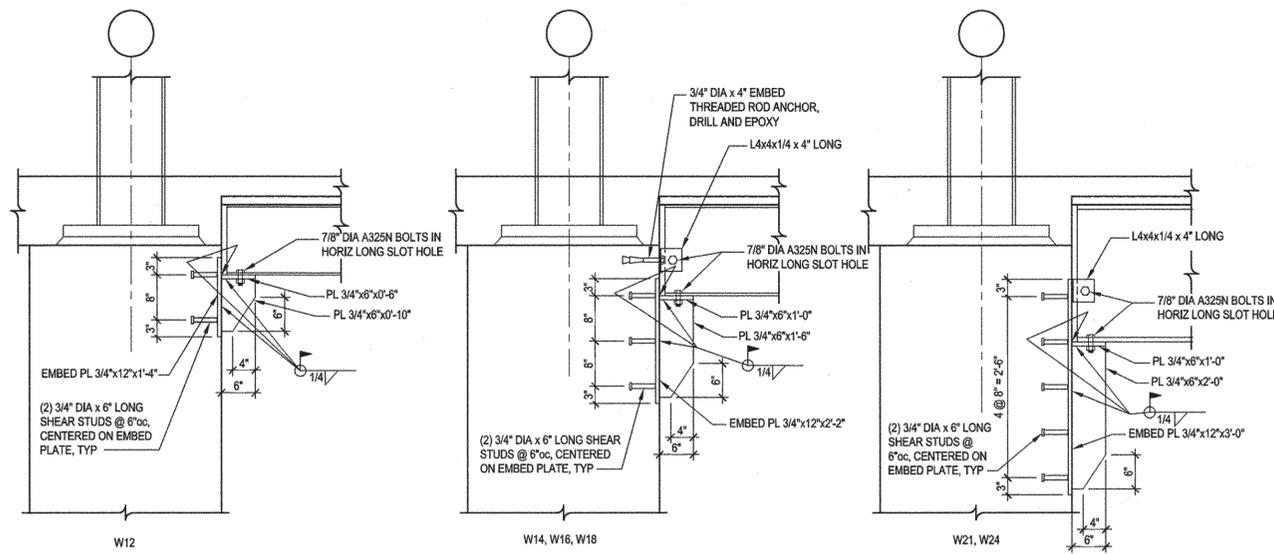
12/9/09
DATE

PLANS APPROVAL DATE

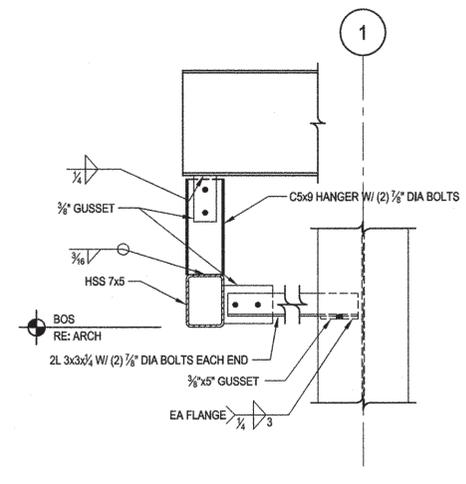
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BAY AREA TOLL AUTHORITY
101 EIGHTH STREET
OAKLAND, CA 94607-4700

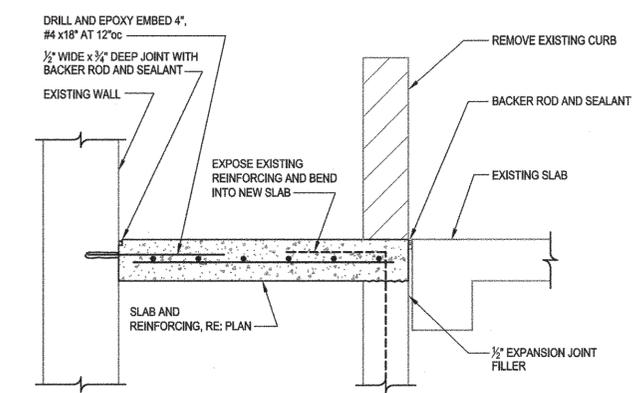
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CALIFORNIA ARCHITECTS, P.C.
ONE BUNKER HILL BUILDING
601 WEST 5TH STREET, SUITE 1010
LOS ANGELES, CALIFORNIA 90071



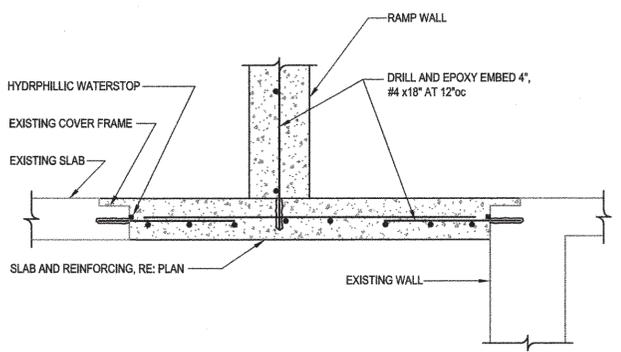
10 FOUNDATION SECTION
S-102 SCALE: 3/4" = 1'-0"



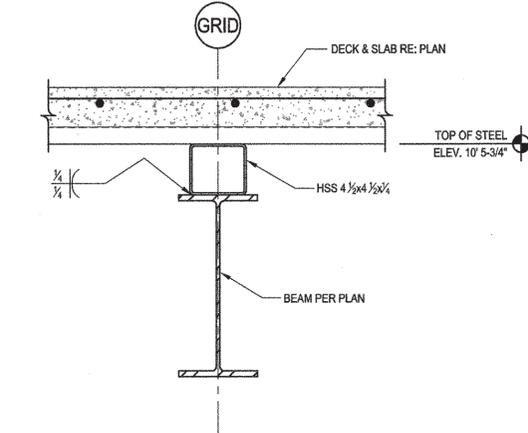
5 DETAIL
S-103 SCALE: 1" = 1'-0"



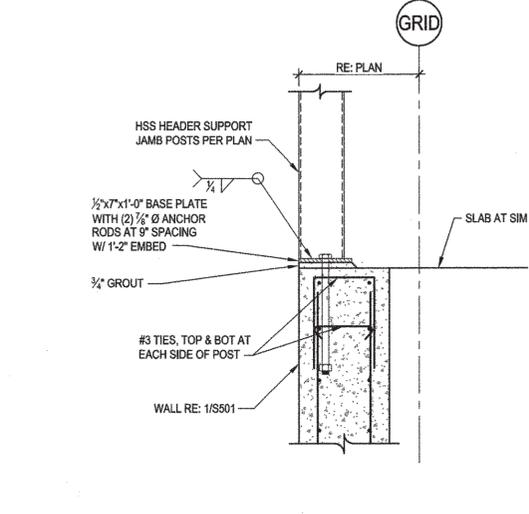
9 LIGHTWELL INFILL
S-102 SCALE: 1" = 1'-0"



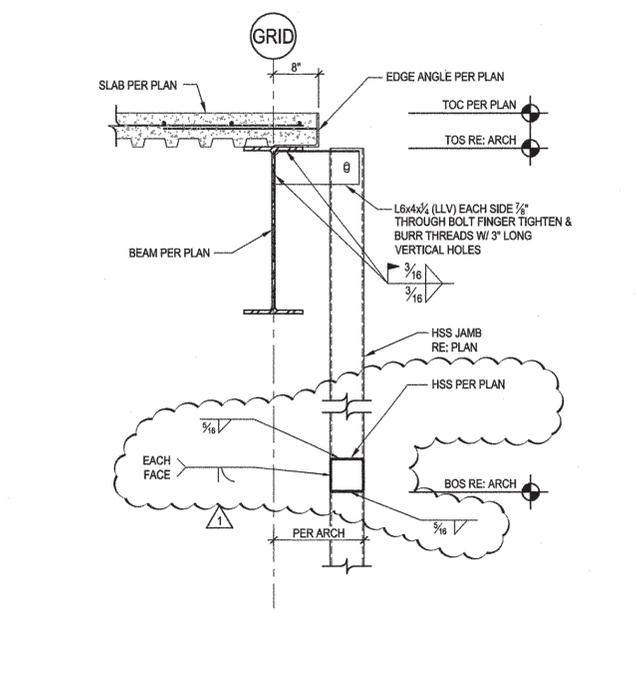
7 HATCH INFILL
S-102 SCALE: 1" = 1'-0"



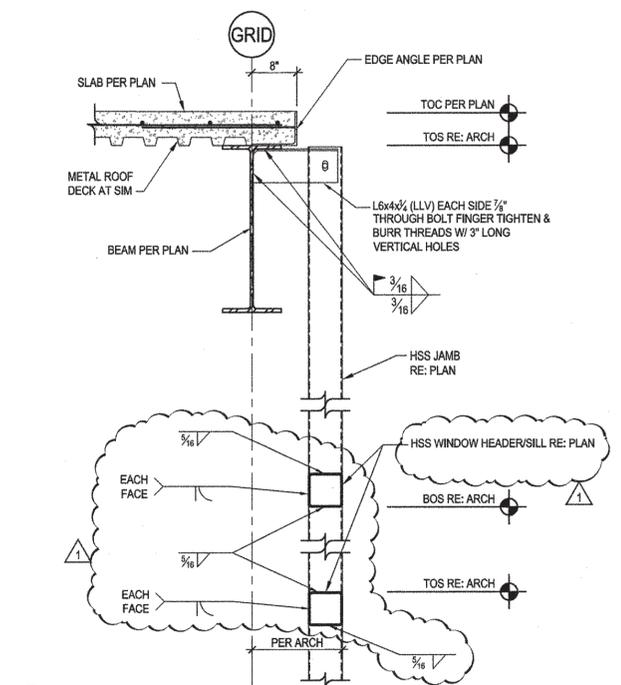
4 DETAIL
S-102 SCALE: 1 1/2" = 1'-0"



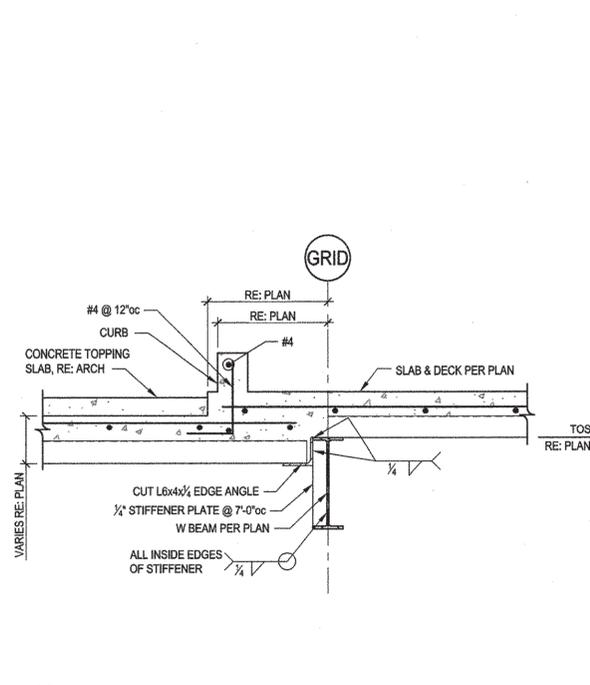
2 DETAIL
S-102 SCALE: 1" = 1'-0"



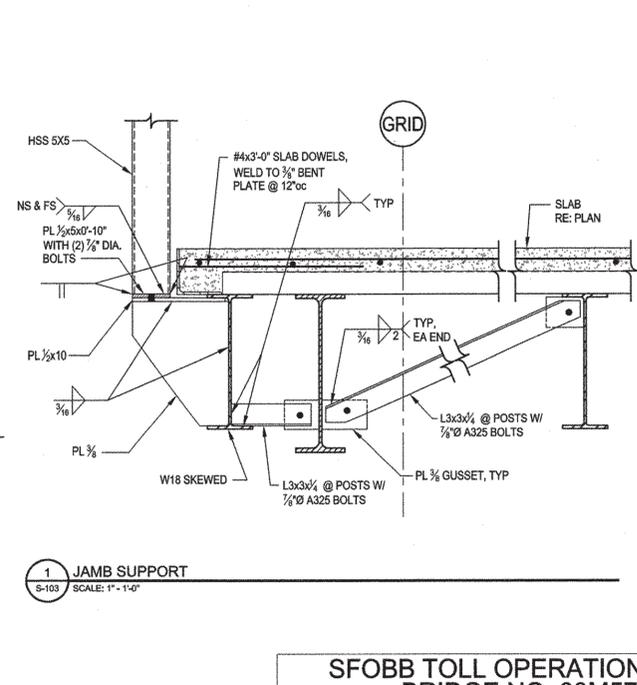
8 DETAIL
S-103 SCALE: 3/4" = 1'-0"



6 DETAIL
S-103 SCALE: 3/4" = 1'-0"



3 DETAIL
S-102 SCALE: 1" = 1'-0"



1 JAMB SUPPORT
S-103 SCALE: 1" = 1'-0"

Drawing Name: S603-structural_floor_framing_details.dwg Layout: S-603 @ I:\COMMON\struct24\PROJECTS\46748_SFOBB\Struct\DWG
Last Saved By: JStanton - 12/07/09 12:26pm - Printed By: JStanton - 12/07/09 12:18pm

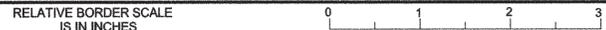
REVISOR
DATE

CALCULATED BY
DESIGNED BY
CHECKED BY

CONSULTANT FUNCTIONAL SUPERVISOR

BAY AREA TOLL AUTHORITY

BORDER LAST REVISED 10/15/2009



USERNAME => \$USER
DGN FILE => \$REQUEST

**SFOBB TOLL OPERATIONS BLDG
BRIDGE NO. 33M5785
FLOOR FRAMING SECTIONS
AND DETAILS**

SHEET
S-603

CU 0000 EA 04-002974

ISSUED FOR BID 3/10/10

APPENDIX 3 12-09-09

DATE PLOTTED => \$DATE
TIME PLOTTED => \$TIME
LAST REVISION 10/19/09

